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Edited by Prof.Dr. Hüseyin Gökçekuş

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Environment: Survival and Sustainability

19-24 February 2007 Nicosia-Turkish Republic of Northern Cyprus

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Near East University, Nicosia-Northern Cyprus

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PREFACE

Creating a sustainable and a healthy environment is one of the most important global issues facing mankind today. Therefore, serious consideration should be given to environmental problems and concerted efforts should be made worldwide in order to respond and prevent present and future environmental risks and challenges.

The International Conference on Environment: Survival and Sustainability (ESS 2007) organized by the Near East University between the dates 19 and 24 February 2007 was held in Lefkosa, Turkish Republic of Northern Cyprus. The main objective of this multidisciplinary conference was to gather scientists from all over the world to discuss the overall issue of the environment, to find out sustainable solutions for environmental problems and to identify areas for future collaboration in this matter. The conference brought together 2,052 participants from 108 different countries. During the conference a total of 1,463 papers were presented under 21 different subtopics, representing various scientific disciplines. The topics included environmental law and ethics, environmental knowledge, technology and information systems, media, environmental awareness, education and lifelong learning, the use of literature for environmental awareness and the effects of the green factor in politics and in international relations.

The Scientific Committee of International Conference ESS2007 evaluated all of the 1,463 papers and selected among them 610 papers to be included in The Proceedings of Environment: Survival and Sustainability. The readers will notice the wide range of topics represented by the papers included in the Conference Proceedings.

It is hoped that this book will serve to contribute to increase in awareness towards various environmental issues as well as drawing more attention to the urgency of international cooperation and collaboration in pursuing sustainable environmental management.

Prof. Dr. Hüseyin Gökçekuş
President of the Conference and the Organizing Committee
Vice Rector of the Near East University
Lefkoşa-TRNC
18 February 2009



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ACKNOWLEDGMENTS

The Organizing Committee of the ESS2007 Conference would like to extend its sincere appreciation to Dr. Suat Günsel, the Founding Rector of the Near East University, to Prof. Dr. Ekmeleddin İhsanoğlu, General Secretary of the Organization of Islamic Conference and to Prof. Dr. Walter W. Kofler, President of ICSD/IAS for their significant support and encouragement in the conference.

Appreciation is also extended to the chairpersons, the keynote speakers and the presenters of papers in the conference.

We are deeply grateful for the members of the editorial board who have carefully read and recommended the papers for publishing.

We also wish to express our gratitude to numerous individuals for their valuable contribution to the editing process.

Prof. Dr. Hüseyin Gökçekuş
President of the Conference and the Organizing Committee
Vice Rector of the Near East University
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Message from the Honorary President of the Conference

The interaction between humans and their environment has entered a critical stage as the delicate balance between them has become more fragile making it difficult for the nature in many areas to renew itself. All this poses a variety of serious challenges for us all. The main challenge before us is no less than redefining our entire relationship with our environment. At this critical juncture, I feel excited and take pride in once again hosting such a distinguished group of scientists, researchers, journalists, and students from all over the world at our university addressing such a critical global concern. I look forward to welcoming you all in Turkish Republic of Northern Cyprus.

Yours truly,
Dr. Suat İ. Günşel
Founding Rector of the Near East University



Message from President of the Conference

It gives me the utmost pleasure in welcoming you all to the International Conference "Environment: Survival and Sustainability" here at the Near East University in Turkish Republic of Northern Cyprus to be held at 19-24 February 2007.

The conference aimed at bringing together more than 2,000 scholars and researchers from over 90 countries around the world to discuss environmental issues from a variety of perspectives; underline the importance of the need for urgency in taking steps by the international organizations, states, local authorities and non-governmental organizations to move to a sustainable environment/development model; and thereby makes its contribution to worldwide debate effort on strengthening the bridge between theory and practice in meeting environmental threats/challenges.

Since our last international conference on environment, "Environmental Problems of the Mediterranean Regions", worldwide environmental disasters as well as local ones have multiplied and environmental degradation and pollution has continued. While major strides have been made in the world in analyzing, understanding and informing the public about the environmental challenges we are facing, we still have a long way to go. Our way of life is still far from a sustainable model and our environment continues to degrade and deteriorate due to human activities. The consequences can be seen in worldwide environmental disasters as well as locally in our daily lives.

This is going to be our third international conference on Environment organized by our young university since it was established in 1988.

Yours sincerely,
Prof. Dr. Hüseyin Gökçekeuş
Vice Rector of the Near East University



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OPENING SPEECHES

Prof. Dr. Ümit HASSAN
Rector of Near East University, TRNC

His Excellency, the Prime Minister of the Turkish Republic of Northern Cyprus,

His Excellency Secretary General Organization of the Islamic Conference,

Distinguished guests, colleagues, ladies and gentlemen,

On behalf of the Founding Rector and the Near East University, I take this opportunity to wish you all a warm welcome for a fruitful conference. It is a great pleasure for me to be a participant at this international conference.

The International Conference on Environment, Survival and Sustainability is a new and most important sequel to a chain of international conferences organized by the Near East University. I trust the conference will provide participants with an opportunity to discuss, to show and to express the related problems and share their experiences. I believe that we will have a most beneficial scientific medium taking the battles into consideration between theoretical analysis and experimental observations and studies.

It is evident that this balance of methods and techniques will have to create a high level of scientific contribution. In other words, the conference will strengthen the bridge between theory and practice in meeting environmental threats, and emphasize the urgent need for coordination and integration among all bodies towards a more sustainable environment. I would like to take this opportunity to proudly emphasize and announce the accomplishments of the Near East University in fulfilling the requirements in founding the School of Medicine as a subsequent step following the School of Pharmacology and the School of Dentistry which will start to function properly in this coming academic year. Within this context, I would like to inform you that the technological means and the academic staff needed by such schools are at the highest level at the Near East University. Our conception of the Technopark being different from the practices of other universities is solely aimed at using our efforts and resources in developing the necessary infrastructure for establishing a Medical School which will be in the service of the island. From a social-psychological perspective, I believe this will enhance the perception of people regarding the dimensions on the management of health issues of the islanders, and for us this would be a moral boost. Considering the significant intellectual and moral capacity of the participants, I simply think that we all want to declare that each and every soul on this planet has the right for survival and to be included amongst the fittest.

Thank you, thank you all.



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Prof. Dr. Hüseyin GÖKÇEKUŞ
President of the Conference & Organizing Committee
Vice Rector of Near East University

Your Excellency, President of the Turkish Republic of Northern Cyprus,
Your Excellencies, Distinguished Scientists and Participants,
Ladies and Gentlemen, Members of the World Press

On behalf of the NEU, I would like to welcome you all to the “Environment: Survival and Sustainability” Conference organized by Near East University in LEFKOŞA.

Today, it has been understood that environmental problems with their cumulative characteristics are closely interrelated with many economic, social, cultural, political and administrative parameters, which are naturally interrelated with academic insight.

Near East University was established in 1988 and has since then grown to become one of the fastest developing universities in the region setting itself the strategic goal of joining the “top 500 universities in the world.”

Near East University is a member of the European University Association, the International Association of Universities and the Federation of the Universities of the Islamic World.

The University has over 3,000 staff, of which 900 are academic personnel. 17,000 students from 44 different countries are attending 12 faculties and 50 departments at the university. There are 14 dormitories with a capacity of 4,000; and several new dormitories are under construction. Nearly 50% of the students receive scholarships. This figure includes full scholarships, partial support given to students who are in need of financial help, and to those students with sportive accomplishments.

The University has to date organized 12 international conferences and congresses and many local and regional conferences, seminars and panel discussions on a variety of subjects.

The Near East University is honored to host this world conference which has surpassed in scope and content the conferences it has organized before.

Around 2,000 participants from more than 100 countries in the world are present here to discuss environmental issues from a variety of perspectives.



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Turning back to the cumulative characteristic of the environmental problems, it is clear that ecological deterioration is the most important problem resulting from regional conflicts, demographic outburst, consumption of natural resources, starvation, degradation of the environment, dwindling fresh water supplies, natural mega-disasters like typhoons, earthquakes, and landslides. Hunger and malnutrition are a direct result of a lack of access to/or exclusion from productive resources, such as land, the forests, the seas, water and technology. As such, this problem is gradually gaining weight in international and national environmental politics, because all these are threatening the common future of humanity. This has refocused the world's attention on the urgency of researches and practical steps on environmental issues. These issues require global solutions in accordance with their global characteristics.

In the EU programme called "*Environment 2000: Our Future, Our Choice*" 4 major topics have been selected as priority targets.

Climate Change

Biological Diversity

Environment and Health

Management of Natural Resources and Waste

Sustainable development is the solution that leads towards a strategy that will consider the environmental problems for future generations.

Most important guidelines for Sustainable Development are:

- Demographic control.
- Reforestation.
- Protection of agricultural areas.
- Energy saving.
- Development of renewable energy sources.
- Improvement in the implementation of existing legislation.
- Integrating environmental concerns into other policies.
- Working in cooperation with the business.
- Educating people to change their unfriendly behaviors towards the environment.
- Environmental accounting in land-use planning and management decisions.

Global Environmental strategy is a must.

**ENVIRONMENT DOES NOT UNDERSTAND POLITICS.
IT HAS NO BOUNDARIES OR BORDERS.**

The main message of our Conference will contribute to the worldwide debate and create a multi-disciplinary discussion forum where experts from various disciplines will be able to discuss environmental issues in 21 fields such as culture, biodiversity, health, education, business and economy, environmental technology, climate change and energy among others.



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Dear Guests,

Environment: Survival and Sustainability Conference is going to give you all an opportunity to get to know Near East University. The Grand Library collection has reached to more than 500,000 while 52 million articles are accessible through electronic databases. The Grand Library is fully computerized and linked to many major world libraries and research institutions throughout the world. It is open 24 hours a day, serving not only the university but the whole community. In other words the Grand Library functions as a national library.

It is my pleasure to extend our gratitude to the members of the Scientific Committee and the International Advisory Board whose active role raised the scientific level of this conference and also increased the number of participants. Unfortunately, some of the Scientific Committee members withdrew due to non scientific letters they received.

In my opinion, as pointed above

**SCIENCE HAS NO BORDERS and NO BOUNDARIES.
IT IS OF THE HUMANS and FOR THE HUMANS.**

Coming to our SLOGAN:

RIO 1992

Johannesburg 2002

Nicosia 2007

We do not have much time to lose.

On behalf of the Organizing Committee, I would like to extend our special and sincere thanks to our Founding Rector Dr. Suat Günsel, whose basic aim is to provide generous support for the improvement of continental lifestyle capabilities of the island.

We extend our gratitude to Islamic Development Bank and to the Secretary General of Islamic Conference Organization, Prof. Ekmeleddin İhsanoğlu for their invaluable contributions.

I would like to convey our thanks to the government of Turkish Republic of Northern Cyprus for their support.

Our special thanks go to the Organizing Committee Members and the students who worked day and night for the success of this conference.

Last but not least, we would also like to extend our gratitude to H.E. Mr. Ban KI-MOON Secretary General of the United Nations, for his kind moral support.

I believe this conference will scientifically contribute to the solutions of environmental problems, and hope you will enjoy your stay in our beautiful country.

Thank you.



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Rahmi KOÇ

Honorary Chairman & Founding Member of TURMEPA, TURKEY

Mr. President, Mr. Prime Minister, Your Excellencies, distinguished guests, Ladies and Gentlemen

I would like to express my gratitude to Mrs. Sıdıka Atalay for inviting us here for this very important international conference today. As founder of TURMEPA, The Turkish Marine Environmental Protection Association, I would like to share my views with you regarding our activities and accomplishments in Turkey. Why and how did I found TURMEPA? You can call it luck, you can call it coincidence. I was the Chairman of the Turkish-Greek Business Council for six years. During this period, every effort that I made to get the two countries' businessmen to cooperate failed. The Greeks never said no, but they never got their act together either. Again on one occasion in Athens, though I had great enthusiasm to continue to join forces for an interesting project, unfortunately I was very disappointed by their lack of response. At the end of the meeting just before we had lunch, the late shipping Tycoon, George Livanos, who was sitting at the very back of the conference room, called me and said, "Look here, I've been following you and your efforts for sometime and see that you are not getting anywhere and are becoming frustrated. If you really want the Greeks and Turks to cooperate in one area, that will be the environment." He also said, "I founded HELMEPA, Hellenic Marine Environmental Turkish Association, called TURMEPA and let them two cooperate to keep our seas clean. So in 1994, 24 friends believed in the cause and we founded TURMEPA, the first NGO specifically dedicated to keeping the seas clean. At that time, HELMEPA was already eleven years ahead of us and the World Bank had been gathering data on Turkish seas and marine life from HELMEPA. Soon, I found out that this was a long term project and would at least need one generation's commitment. During our efforts, we learned that there are four very important points. Point number one: It's more economical to keep our waters clean than to clean them after polluting them, this was very important. The second important point: the subject is a major undertaking and cannot be done by one association alone and requires a nationwide awareness of the problem. Our third finding was that it needed education; education is most important in achieving our goal. The last important point was international collaboration that is a must as the environment does not have borders, does not have barriers, religion, race or different languages and no politics are involved. With these four points in mind, we first trained teachers in primary schools in coastal areas and then distributed hundreds and thousands of books to these students and pupils. We also held a drawing competition with the subjects of clean seas, we made films for television and cinemas, we used newspaper advertising to get our messages across, and we worked with several universities to test water quality. In the 30 years, from 1960 to 1990 the number of species in the Marmara Sea, believe it or not, came down from 148 to only 14. Now they are coming back. We have started to see dolphins in the Bosphorus and this is good news because when dolphins come, other marine life generates itself. We set up a data room to collect and store information about marine life, our seas, inland waters and currents.



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We learned to our surprise again that only 10% of sea pollution comes actually from shipping. The risk comes from domestic and industrial waste; therefore, we set up a system to monitor waste being dumped in our seas. Clean seas are of most importance to tourism which is a major source of revenue for our economy. Therefore to this end, we collaborated with sea side hotels, holiday villages, restaurants and cafes to ensure their compliments with environmental regulations. We then hoisted our TURMEPA flag on their premises. When they did so in the summer months, we put together a team of students to collect garbage from boats and yachts free of charge, we set up garbage containers in coastal areas where garbage can be deposited by banks, businesses, industries and then collected by municipal authorities. Our financing is usually organized on a project basis. With all this said and done, Ladies and Gentlemen, our efforts are still only a drop in the ocean if awareness is not felt by our citizens. Therefore, we are constantly telling the public at large that we have ignited a spark, which we must still help to spread throughout the country.

I am happy to say that the Turkish government and its Ministers, especially the Ministry of Transportation, our Governors, Mayors, academicians and businessmen have realized that clean seas are one of the most important issues we are facing. Clean seas mean life and oxygen. Polluted seas not only kill marine life but also tourism and give third world nation appearance.

I am delighted that I am joined today by our Chairman Eşref Cerrahoğlu, who is himself a ship owner and our Board Member Mr. İbrahim Yazıcı who is himself a sailor, and our General Secretary Levent Ballar who never stops coming up with a new project.

Before I finish, I would like to ask our Chairman, who made contacts yesterday, to give good news to our Cypriot friends.

Thank you for bearing with me.



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Eşref CERRAHOĞLU
Chairman of Executive Board of TURMEPA, TURKEY

Mr. President, Mr. Prime Minister, Ladies and Gentlemen,

My Honorary Chairman addressed TURMEPA's activities. I am very pleased and honored to announce our work carried out in North Cyprus. Today, we will be opening a branch of TURMEPA in Girne, and more importantly, we will open a sea and shore observation center in Girne in partnership with the Municipality of Girne and the Near East University, and before the summer of 2009, our training and education program will start.

I would like to thank Mrs. Sıdıka Atalay for accepting the coordination of TURMEPA activities in North Cyprus, and I am confident that we will have all the backing of our President and our Prime Minister, and the people of Northern Cyprus.

Thank you.



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Cemal BULUTOĞLULARI
Mayor, Turkish Municipality of Lefkoşa, TRNC

Honorable President, Prime Minister, Secretary General of the Islamic Conference and distinguished guests,

Welcome to Lefkoşa.

The habitat mentioned and diversity of living creatures are shrinking everywhere due to an increase in the fragmentation of landscape. The situation in Cyprus is heading towards a formidable shortcoming in terms of environmental resources. In Cyprus, we have already started to see the danger. There is a great need to improve the diversity and human health on the island. Despite the efforts put forward on these specific issues and existing threats, we still need to stress the fact that deeper collaboration is needed amongst the developing nations.

The conclusion that will be reached at the end of ESS 2007 conference will be a torch light for our municipality and we shall consider balanced use of sources in the future services and activities for Lefkoşa. I wish you all a fruitful conference during your stay in Lefkoşa and North Cyprus.

Thank you.



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Asım VEHBİ
Minister of Environment and Natural Resources, TRNC

His Excellency, the President of the Turkish Republic of Northern Cyprus,
His Excellency, the Secretary General of the Islamic Conference Organization,
Honored guests,

I would like to welcome you all to our conference on Environment, Survival and Sustainability here in the Near East University in the Turkish Republic of Northern Cyprus. Northern Cyprus is honored to host you with this international conference. I believe that the conference will be an important recognition of the issue of this week's environmental topics which concern not only Cyprus but also the whole world. This conference is bringing together almost 1,500 academicians from more than 100 different countries and there are 21 major topics that reflect all areas of environment such as business and environment, environment and health, global warming and a lot of others.

With the industrial revolution in the late 18th century, human beings started to change the global environment. Prior to industrialization the only unsustainable losses from human economic activities were forest cover and topsoil. Most societies were relatively based on small and simple technologies using limited amounts of energy with limited territorial area, but the industrial revolution in Europe has changed this. After the revolution, large scale exploitation of fossil fuels enabled the human societies to consume natural resources, the potential of which seemed limitless. Most of our environmental problems today have a global dimension precisely because of the process of development initiated by the industrial revolution. After the 2nd World War, the world population increased rapidly. With this increase, the world started to use more fossil fuels, but these human activities effected the world adversely and we started to lose biodiversity in the environment. It is stated that every year we are losing at least 50 different species of live food and every year a vast coverage of agricultural land has been lost due to unplanned development and soil erosion. The forests of the world are declining every year. Waste management of all kinds of waste is another problem including domestic waste and hazardous waste. Societies are producing more waste and waste amounts are increasing every year. The uncontrolled dumping of waste is still continuing specially in developing countries and polluting the soil, air and water resources.

Water shortage is another important problem. The amount of drinkable and usable water is decreasing while we are polluting these resources. Almost two weeks ago, IPCC released the draft project from its fourth assessment report where it puts forward that our climate is changing mainly because of inter human induced efforts. Global atmospheric concentrations of carbon-dioxide, methane and nitrous-oxide have increased as a result of human activities and now far exceed pre industrial values determined from many thousands of years. The global increases in carbon-dioxide concentration are due to primarily fossil use and land use change while those of methane and nitrous-oxide are primarily due to agriculture. The net result of these effects is a global average temperature rise of 6°C in the last century. When we compare its greenhouse gas emissions within those other developed countries, Cyprus as an island may not have significant effects on the global warming but on the other hand, we may be one of the most effected countries



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from this problem. According to different United Nations scenarios, the temperature of the island may increase 2 to 4 degrees Celsius in the following century. It is also foreseen that we may have serious water problems and shortages in the near future due to increasing water demand and up to 40% decreases in the precipitation values according to the climate model predictions. Another effect of the climate change expected for Cyprus is an increasing loss of productive land leading to the desertification of the island. We have also been facing serious environmental issues like other developing countries such as problems in waste, waste water management, copper mining related problems such as the CMC and a lot of others. To solve these problems and harmonize with the European Union, the present government of the Turkish Republic of Northern Cyprus has agreed to form a separate ministry for environment: The Ministry of Environment and Natural Resources. The main mission of the ministry is to protect the environment in Northern Cyprus and ensure the sustainable use of its natural resources as well as to preserve its cultural heritage. The role of the ministry is to develop and implement the government's environmental policies in order to achieve its mission in environmental protection, sustainable use of natural resources and preservation of cultural heritage. In particular, our responsibilities include establishing coordination between different ministerial departments internally and with other ministries externally, mainly with Turkey, the European Union and others on issues of sustainability and environmental protection. We have also started to develop necessary policies and legislation. We are reviewing and endorsing different policies and legislation, submitting draft legislations to our Parliament for discussion and approval. We communicate with the media and the public on environmental issues. We provide support for environmental education in all levels of the education system. The environmental policy concerns of the Turkish Republic of Northern Cyprus should be based on economic prosperity and social coherence, taking into consideration the following three key elements.

The first one is sustainable development. Social and economical development will take place in a way that preserves our natural and cultural heritage and resources. The second one is to follow the European Union rules and standards on environmental protection. Our laws will be harmonized with the European Union environmental legislation and policies to protect and preserve our environment and the health and life of our people. The third element will be the establishment of the environmental governments' partnership model among the administration, all sectors of the economy and our people through processes which will both inform about environmental issues and standards and involve people in the associated decision making processes.

Before I finish my words, I would like to express the importance of sustainable development. All of the problems I have mentioned show us that we have to develop in an environmentally sustainable way. We have to protect the environment and preserve our natural and cultural heritage while we are developing.

I would like to thank all of the participants who came from other countries and also I would like to thank the Near East University for this wonderful organization and their great team for their outstanding efforts. I hope that this conference will shed light on most of our regional and global environmental problems.

Thank you.



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Tahsin ERTUĞRULOĞLU
Leader of the National Unity Party(UBP), TRNC

Distinguished contributors, participants and honorable guests,

It is indeed an honor for all of us here in the Turkish Republic of Northern Cyprus to welcome you in a country that supposedly does not exist. Your presence here in the name of knowledge and academic freedom, and above all, in the name of service to humanity will hopefully give a valuable lesson to those who tried so desperately to prevent your participation and contributions to this conference.

Dear friends, you shall be subject to further propaganda and will be delivered misinformation about the circumstances here upon your return to your respective countries. The challenging spirit that you have, the spirit of not bothering about those that stand in the way of knowledge, friendship and partnership and service merit will guarantee the success of this most valuable conference.

In closing, I wish to thank the Near East University for working so hard and for so long in making today a reality.

I wish to thank you all for being with us here today. I wish the conference every success.

Thank you.



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**Assoc. Prof. Dr. Turgay AVCI
Deputy Prime Minister & Minister of Foreign Affairs of TRNC**

Your Excellency, Mr President,

Your Excellency, Prime Minister,

Honorable Secretary General of the Organization of the Islamic Conference Prof. Dr. Ekmeleddin İhsanoğlu,

Your Excellencies, distinguished participants, Ladies and Gentlemen,

Today is the day. It is the day of pride and success, the day of international victory. It gives me great pleasure and honor to address a conference of which timing is very important, and welcome you all to the Turkish Republic of Northern Cyprus.

I also would like to thank the Near East University, particularly to its Founder Rector and Honorary President, Dr. Suat İ. Günsel, and the Rector, Prof. Dr. Hüseyin Gökçekuş, and many others who have patiently and continuously carried out efforts to bring this very important conference into life. A thousand papers from over 100 countries are going to be presented today. I, myself being an academican for 15 years before being a politician, know the importance of presenting a paper in such a conference. I know the excitement, the feeling, the success of presenting, asking questions and the feeling of success at the end of such a conference. I have participated in many conferences internationally. I have presented many papers in many countries. It is a great feeling; it is a great pleasure. I know your feelings and I know the success and pleasure that you will get at the end of the conference. Even under normal circumstances, conferences and organizing conferences would have been a drowning task, but in a country like this which is under an inhuman political, economical and cultural isolation and embargoes due to Greek Cypriot's political blackmail and pressure, it is much more difficult to organize such events. It is very much appreciated that you have stood up against these immoral efforts by putting science and survival of global environment first in the line rather than politics. The future of our world and of our children needs courageous scientists, thinkers and writers like you who are able to transit between politics and political pressures wherever they are fighting for the survival of humanity and the global environment. The bounties and rich resources of our planet have given their best to civilizations throughout the past, but we have reached a point in time and technology that our activities have exceeded the life saving abilities of the earth. The global challenges and the level of distraction we have caused are too great now.

The issue of globalization of environment and conservation is the most crucial and urgent issue that the whole of mankind face today. The survival and sustenance of our environment and biodiversity has importance for our future, and just opened our commitment to fight and fight hard for our world. Businessmen, scientists, intellectuals, artists, politicians, indeed the whole of humanity, must stand and strengthen our struggle in this issue. The results of this conference must provide us with the strategies of sustainable environmental management through the development



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of environment friendly technologies and legislation. We must also show the way for social survival to all global citizens, local governments and non-governmental organizations, and because of this, we have a very challenging but at the same time a noble task. In this context, we also strongly believe that institutions from primary schools to universities throughout the world should make in learning the most important attempts to teach about the environment and to train about the protection of environment. I am pleased to inform you that we have a coalition government in the Turkish Republic of Northern Cyprus and we have a Ministry called the Ministry of Environment and Natural Resources. My friend who spoke a few minutes ago is in charge of this ministry. With these thoughts in mind, I would once more like to take this opportunity to thank Near East University and its Honorary President Dr. Suat İ. Günsel for organizing and hosting the Environment, Survival and Sustainability Conference and wish you success in your deliberations.

I thank you for being here in the Turkish Republic of Northern Cyprus and I am sure you will enjoy your stay here and you will remember us and tell the rest of the world the Turkish Republic of Northern Cyprus is a place to be, a place to visit and a place to enjoy.

Thank you.



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Türkekul KURTTEKİN
Turkish Ambassador to Lefkoşa, TRNC

Mr. President, Mr. General Secretary of the Organization of the Islamic Conference, Ministers, Members of the Parliament, Distinguished Party Members, Members of the Organizing Committee, Members of the Media,

Let me first comment on the Near East University for organizing this conference and express my pleasure that I have the opportunity to say a few words about the conference.

From my perspective, the conference is significant for a variety of reasons. Firstly, a very important topic will be addressed throughout the conference. It reminds me the 1972 United Nations Conference on the Human Environment held in Stockholm, the 1992 Earth Summit or the United Nations Conference on Environment and Development held in Rio, and the 2002 World Summit on Sustainable Development held in Johannesburg.

The world constituted combined efforts by the international Community to face a common challenge, that is, the protection and preservation of the environment while achieving developmental objectives in the rapidly changing world. In spite of these efforts, the challenge stays pretty much alive. We, the human beings, have disturbed the balances of nature and the environment. However, we have no luxury for skepticism. A few minutes ago, we heard about the cooperation between TURMEPA and HELMEPA from Mr. Rahmi Koç which proved to us that if there is a will this challenge will be gradually met. You, experts from various disciplines, from academy, various policy makers and executives responsible for the implementation in many countries will be discussing ways to overcome this challenge. Major topics of discussion in the conference show the multi dimensional character and the magnitude of that, and the outcome of your discussions and your deliberations will contribute to the efforts to increase world awareness on this important challenge, and I hope it provides useful material for the decision makers by strengthening the bridge between theory and science.

Secondly, the meaning of this conference in my opinion reflects the severity faced by the Turkish Republic of Northern Cyprus with its people and its institutions. Environment, the problems, economic and industrial development are interrelated issues. The importance of minimizing the environmental damage while achieving sustainable development is widely realized in the Turkish Republic of Northern Cyprus, which is a country going through a remarkable development in the recent year with a growth rate approaching 14% in 2005 and with an increase of 7% in 2006. The increasing public awareness in the Turkish Republic of Northern Cyprus about institutional measures such as the establishment of the Ministry of Environment and Natural Resources constitutes a good, encouraging example. Thirdly, this international conference, which we were told is the 12th of its type organized by Near East University, demonstrates the important role of universities in the Turkish Republic of Northern Cyprus. As many of you have mentioned, education was amongst the fields falling within the problems of the community in the 1960's. The progress achieved by the Turkish Cypriots in this field is commendable and demonstrates the



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unacceptability of the isolation the Turkish Cypriot people have been subjected to for many years. Even in such circumstances, the Turkish Cypriots have been demonstrating their will and determination to move ahead and to combine forces with the international community to face the common challenges to humanity.

Let me conclude by hoping that this conference will create more awareness around the world and in this respect, the recognition of the Turkish Cypriot People will no more remain unattended. Let me also wish all the distinguished participants of this conference every success and express my sincere hope that your deliberations will contribute to the combined efforts to give a better world to the next generations.

Thank you.



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Ferdi Sabit SOYER
Prime Minister of TRNC

His Excellency, Mr. President,
His Excellency, General Secretary of the Organization of the Islamic Conference,
His Excellency, Minister and Members of Parliament and the very important scholars who have come to our country for this conference,

I would like to greet and welcome you all.

Today is the beginning of a meaningful conference where very important environmental issues will be discussed in this conference hall. As you can see, all the flags in this hall symbolize a different color and a different history of all the nations, and as we also know, the colors of nature are reflected by these flags in this beautiful atmosphere. If nature had been just one color, just yellow or just green, the richness and beauty of living would not be seen and people would not have even been able to fall in love. This colorful atmosphere reflects also the dynamism of human beings. Also, this dynamism provides the humans with the ability to find and change everything in nature which they need. It is because of this developing dynamism that human beings take what already exists in nature and turn it to their benefit. Although there are many differences among all nations we should still cooperate together to protect nature. I strongly believe that this conference will bring very important conclusions. I also believe that although the Turkish Republic of Northern Cyprus and Turkish Cypriot society have been isolated both politically and economically, this conference will have very important outcomes. We want to be recognized in the world with our nation, with our national identity. This conference also gives out this message to the world.

I would like to thank the Near East University, the valuable Rectors, and Scholars for participating in such a conference. I would also like to thank and welcome once again the valuable scientists for coming to our country.

Thank you.



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Prof. Dr. Ekmeleddin İHSANOĞLU
OIC Secretary General

Your Excellency Mr. President, Mr. Prime Minister, distinguished scholars, Ladies and Gentlemen,

I sincerely greet you all. It gives me great pleasure to be with you here. It is a great pleasure to be at the opening ceremony of this important event: The International Conference on Environment, Survival and Sustainability organized by the Near East University. I am grateful to Near East University for their kind invitation which has enabled me to address such a distinguished gathering. I would also like to thank you all who have worked hard, took part in preparation and realization of this project.

Let me share with you my honest feelings. I am not a newcomer to this island and I have heard a lot about Near East University and I have also heard of its good reputation. Some of my friends' sons and daughters were here as students. I have heard all the facts and data about the universities. I am really impressed.

His Excellencies, Ladies and Gentlemen,

I am not an expert on environment issues but the convening of this important conference is very timely as the subject matter has become a very serious global matter. We read all the reports on a daily basis about the dangers of climate change. Climate change and environmental degradation affect the whole world. Meanwhile we hear the frequent comments of the world leaders about the lack understanding and cooperation on environmental issues which might lead us towards the destruction of our planet and humanity. Global pandemics, deforestation and natural disasters are only a few of the issues that presently affect the globe. All these problems are at the heart of sustainable development that we all need to achieve. We find ourselves helpless today when we see rich nations of the world continuing to load the atmosphere with carbon-dioxide; compromising the well being of human race and pushing our planet to an unknown future. It is obvious that these acts have contributed to a rapid change of climate which has caused global warming, rising sea levels, extreme droughts, erosion of soil, loss of the forests and extinction of the species. Sadly, most of the environment degradation is severely affecting the developing world. Its population is facing severe droughts and dry rivers, while some other areas are facing excess floods, rainfalls, mud slides and loss of properties. I am just back from a long trip to Indonesia and I have seen the negative side of the phenomena there. Ladies and Gentlemen, the catastrophes have also negatively affected ecological imbalance. Hence, they have been posing a serious threat to the genetic pool with ramped out breaks of disasters and leading to more poverty in the undeveloped parts of the world. Recognizing the important role played by the environment in the development and in the progress of its member states, the OIC ten year plan of action, a joined action development for the Muslim world to face the challenges of the 21st century, was developed by the 3rd Extraordinary Summit convened in Mecca in 2005 and attended by all heads of state from 57 OIC countries.



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In this context, I would like to bring to your attention the fact that the heads of state present in this Summit in December 2005 made a very strong appeal to all OIC member states and their institutions on the issue and were able to coordinate their environmental policies and positions in the international environmental issues so as to prevent any adverse effects of such policies on their economical development.

Following the adoption of the OIC ten year plan of action, I have organized several meetings with the OIC institutions and stakeholders in the framework of the implementation of the OIC ten year plan of action. The OIC General Secretariat itself is committed to the world capacity and policies to contribute to the global efforts to counter the environmental challenges. The OIC also notes with pleasure that the majority of its many initiatives and activities reflect the facts of important organizations such as UNEP and our parties to various international conventions on environment in particular to the protocol. Joining such conventions reflect the fact that the OIC member states are giving their attention to the international laws and requirements. Such devotion shall certainly provide us with a solid basis for our future efforts suggested by the OIC ten year activity program.

I would like to praise the Near East University for providing the opportunity for the conference participants to address a wide range of crucial issues such as redefining the business of conservation and management of biodiversity, culture heritage and environmental factors, economics, development and sustainability, energy and development, environment and health, the threat of global warming, ecological balance and sustainable environment and social and psychological dimensions of the environmental issues.

Mr. President, Your excellencies, Ladies and Gentlemen,

I am of the view that the environment issue can be viewed from at least two major perspectives: The perspective of science and technology and the perspective of effects and impacts of environment on economic development. The important contributions and inputs from science and technology to ensure sustainable development cannot be denied. However, environmental challenges that we are talking about are mostly trans-boundary ones and cannot be faced with individual efforts of the nations. The very nature of these challenges require that these states should combine their efforts and facilities together. In this context, the OIC member states are called upon by the conclusions of various OIC gatherings and decisions to join hands to collaborate and to synergize their efforts in performing and undertaking research and development to reduce some of the environmental effects and challenges faced by them. Assessing the effects of environmental challenges on economical development also requires regional and global cooperation and coordination. In the domain of sustainable development perspective, one should address the quality and sustainability of our natural resources, the threat of global environmental changes on ecosystems, quality of life in our cities, impact of the use of energy which is essential to our economies and to the way of life. We should be making use of the technologies available with the view of reconciling economical development with environmental sustainability. The achievements of all mentioned goals require coordination, harmonization and synergizing of our entire actions. In other words, we need to follow up very closely all our activities to monitor their progress, to evaluate and assess the impacts and to take recognition of all possible shortcomings.



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Naturally, addressing you today in one of the heavenly parts of the world, I cannot emphasize as much as I would like to the importance of environmental studies and undertakings aimed at the protection of the Mediterranean Sea and its ecological diversity.

Ladies and Gentlemen, as I value the timely initiative of organizing this conference on an issue of great relevance for my organization and for our member states considering the excellent academics and research qualities and standards of the Turkish Cypriot Universities, I would also like to mark an appeal from this platform to the universities and scientific institutions around the world particularly those based in the OIC.

Thank you.



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Mehmet Ali TALAT
President of TRNC

Distinguished guests, dear participants,

As you may have expected, I will not make many remarks about environment or raise much concern about the environment. My remarks will be mainly political but in the concerns of the environment. Possibly you can claim that environmental concerns should cause an impact to unify humanity because the solutions to environmental problems can only be found by cooperation. So, this unifying factor must be a point of consideration, and we, the Turkish Cypriots know the importance of this fact. We know the importance of being unified with the international community because we are under severe isolation on all aspects of life including environmental issues. My Prime Minister mentioned about the lack of cooperation between the two sides. We are under continuous pressure from our neighbors. Everywhere in the world, we are in a struggle against this isolation issue and try to be unified with the world, and I wish that this conference will give fruitful results to the scientific life and to humanity.

Thank you for your participation and I wish you all success.



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FINAL REPORT OF THE INTERNATIONAL CONFERENCE ON ENVIRONMENT: SURVIVAL AND SUSTAINABILITY

Environment is a subject that must be brought to the top of international agendas if the threats to sustainability and survival are to be countered. It cannot continue to be seen as something to be added on to the plans of commercial enterprises or as a minor component of poverty-alleviation programs. Economic development cannot eliminate poverty without conserving natural resources and maintaining ecosystem services. Nor can productive activity ignore the significant effects of resource extraction and waste generation. Environment must be the central focus of national and international programs at all levels.

The International Conference on Environment: Survival and Sustainability, held at the Near East University, Nicosia, Northern Cyprus 19-24 February 2007, dealt with environmental threats and proposed solutions at all scales. The 21 themes addressed by the conference fell into four broad categories:

1.Threats to Survival and Sustainability

Global warming and other climate changes pose a major threat to natural and human systems throughout the world. Major impacts addressed ranged from dieback of tropical forests to altered ecosystem functions in temperate and boreal systems, changes in sea level and in polar and alpine systems, as well as impact on water supply, agriculture and extreme weather events. Pesticides threaten natural ecosystems and human health. Health is also threatened by diseases, pollution and many forms of environmental degradation. Natural and human-made disasters interact to threaten societies in many ways.

2.Technological Advances towards Survival and Sustainability

Environmental science and technology are advancing rapidly, but are not in themselves sufficient to counter the growing threats to environment. Important areas include integrated water management, new and renewable energy sources, and conservation and management of biodiversity.

3.Activities and Tools for Social Change

Activities and tools that can be applied to move society towards greater sustainability were emphasized at the conference. These included environmental law and ethics, environmental knowledge and information systems, media, environmental awareness, education and lifelong learning, the use of literature for environmental awareness, the green factor in politics, international relations and environmental organizations.



4. Defining Goals for Sustainable Societies

The new directions that societies must take include considerations of economics, development and sustainability, redefinition of the interests of business, incorporating cultural heritage, the seas, ecological balance and sustainable environment, and the social and psychological dimensions of environmental issues.

The breadth of the issues addressed at the conference made clear the need for greatly increased interdisciplinary and international collaboration if survival and sustainability are to be achieved. The exchanges at the conference represent a step in this direction.

Cyprus is getting an equal share from these developments and 51 species are under a threat of extinction. Out of 10 regional mini-hotspots within the principal foci in the Mediterranean, and also considering that Cyprus is island number two with a rich plant diversity and narrow endemism, there is a need for protection of its biodiversity.

The matter of global sustainable development actually has a connotation for change of life styles. This calls for

- interactions and understanding of people the world over,
- fair and equitable distribution of benefits derived from resources,
- conservation of biodiversity and protection of our resources,
- the water use efficiency is very important as the availability of water is becoming scarce,
- we need more international collaboration and research for wider and reliable speculation,
- management of plans and their implementation to save the critical aspects of our heritage and environment,
- cooperation of scientific disciplines is necessary to address the situation,
- countries must work together and minimize the impact of borders on science and maximize the benefit for all mankind,
- in order to obtain global sustainability, the curses of over-consumerism should be overcome by an appeal to social and spiritual values,
- for making the world a happy home for everyone, transfer of knowledge has to take place across nations,
- environment and sustainability have to be treated globally, not just locally, before time runs out.

About 2,052 participants from 108 countries from all around the world joined us to make 1,413 presentations and discuss environmental issues from a variety of perspectives.



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Global Environmental Strategy is a Must.

As I mentioned on the first day of the conference,

“ENVIRONMENT DOES NOT UNDERSTAND POLITICS”.

“IT HAS NO BOUNDARIES OR BORDERS”.

This Conference has contributed to the worldwide debate and tried to create a multi-disciplinary discussion forum where experts from various disciplines were able to discuss environmental issues in 21 different fields.

Thanks to the 2,052 participants from all over the world for making this interdisciplinary conference a success. Their active role raised the scientific level of this conference.

I believe this conference has scientifically contributed to the solutions of environmental problems, and hope you have enjoyed your stay in our beautiful country.

Thank you

Prof. Dr. Hüseyin Gökçekuş



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IMPACT OF GLOBALIZATION ON POLLUTION AND RESOURCE DEPLETION: THE CASE OF NIGERIA

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This article aims at investigating the impact of globalization (trade openness) on pollution and resource depletion in Nigeria. Results indicate that pollution is positively related to trade intensity and real GDP per square kilometre, while capital to labour ratio and GNP are negatively related to pollution thus making trade intensity scale effect negatively related to the environment. In addition, strong evidence emerges that trade intensity, real GDP per square kilometre and the GNP are positively related to environmental degradation making the technique, scale, and total effects of liberalization on the environment detrimental. Composition effect of trade liberalization on natural resource utilization, on the other hand, is beneficial. A number of policy implications emerge from the study for Nigeria as well as other developing economies.

Keywords: *Trade Liberalization, Environment, Development*

I. Introduction

To some extent, all economic activity uses the environment as a dump for waste products. Economic growth, as conventionally measured, might be more rapid if such environmental pollution is inhibited by regulations and other policies. Trade openness has been hailed for its beneficial effects on productivity, the adoption and use of better technology and, investment promotion which are channels for stimulating economic growth. In addition, liberalization has been advocated to be a necessary condition for poverty reduction. Other positive roles of globalization include, increased mobility of capital, increased ease of movement of goods and services and information across national borders in addition to the diffusion of global norms and values, the spread of democracy and treaties including international environmental and human rights agreements. Critics of trade liberalization vis-à-vis the protectionists argue that these much-acclaimed advantages of globalization often underrate the possible impact of globalization in widening the economic gap between the North and the South. Over the years, attention has been given to the advantages of globalization to the detriment of its disadvantages. The major disadvantage that is always swept under the rug is the environmental problem resulting from globalization. In other words, 'openness' to international markets affects pollution levels in developing nations especially in Africa and the magnitude of this impact can be enormous in view of the lax in environmental regulations in these countries vis-à-vis the rest of the world. The new dynamics of trade have increasingly created global and unfettered markets for trade and investment which has significantly increased the destructive impact of economic activity upon the Earth, exhausting the world's natural resource endowment and ecological carrying capacity at such a deleterious rate thus jeopardizing the planet's ability to support future generations.



This problem demands further analysis because governments of African countries only see and recognize other disadvantages of globalization which they promptly incorporate into their trade policies and wider development context, excluding the environmental problem in this situation therefore can result into policy failure and further environmental decadence in developing economy. Another major fear with trade liberalization is the competitive pressures that accompany the continuing process of international economic integration which may lead each government to lower environmental standards (in a “race to the bottom”) in order to enhance the competitive position of local producers in the charged international market place. Moreover, from the developed countries’ perspective and from the published research outcomes, the effects of trade reforms tend to be positive, especially in the medium and long-term. To them, if trade’s impact on scale and composition is real, the technical effect will more than compensate for losses resulting from the two former effects thus making trade automatically beneficial. For Africa, which happens to be a dumping ground for old technologies, there is every reason to believe that trade liberalization’s effect on pollution via the scale, composition and technique effects is a disaster. There is enough reason to believe that trade liberalization which raises the GDP per person may lead to the discharge of higher pollution concentration and depletion of natural resources in African Countries if necessary measures are not taken. Taking measures, however, involves problem identification. This study, therefore, is meant to pinpoint the problem. That is; is scale, composition and technique effects of trade liberalization on pollution real in Nigeria? If yes, to what extent? How can we minimize the trade-induced environmental problems? After determining all these, the result can then be calibrated into Nigeria’s trade policies and wider developmental context. In doing these, the second part of this paper will be a review of literature then a brief review of Nigeria’s external trade structure will be the third part followed by the theoretical issues of trade liberalization and the environment, the fifth part will be on methodology, part six will be result presentation and the way forward.

II. Literature Review

In the literature, one school of thought considered free trade as most relevant for economic development because it maximizes the output of social product. Counter argument about free trade posits that the derivable benefits of free trade are laudable and they are in most cases hypothetical, effective under the conditions of full employment, full allocation of resources and free competition in the economy. Singh (1985) argued that the application of free trade is limited for the developing countries since a vast segment of their productive resources are still unexploited and there is massive unemployment. A free trade regime therefore compounds further their problems by weakening the domestic industries especially those with inadequate competitive powers. In addition, the terms of trade for the developing non-oil exporting countries have deteriorated over the years, Prebisch- Singer thesis therefore explored the implication of this in the 1950s. They contended that there would continue to be a secular decline in the terms of trade of primary-commodity exports due to a combination of low income and price elasticities’ of demand which resulted into a long-term transfer of income from poor to rich countries through import-substitution strategies.



Trade and environment linkage can be explained via the impact of economic growth on environment since the main reason for trade liberalization is to increase economic growth. The growth and environment nexus however, can be explained by the environmental 'Kuznet Curve'. The inverted-U relationship indicates that environmental conditions initially decline in the early stages of development or industrialization, then improve as nations reach the middle-income level and then improve greatly as countries graduate into a higher income bracket. Based on the foregoing, therefore, trade inevitably affects the level of environmental protection through its impact on the Kuznet's curve. Based on the above information therefore, one can say basically that no country has gotten to the downward-sloping part of the Kuznet's curve for some spatially or temporally spread pollutants like the GHG emissions. In addition, many developing countries like Nigeria are living through the part of the Kuznet's curve in which environmental condition deteriorates with economic growth (the World bank, 1990 study provides an assessment of the risks and costs of eight of priority environmental problems of Nigeria as US \$5110 million) meaning that freer trade or trade liberalization will further degrade its environment depending on the part of the Kuznet's curve it is located but based on Nigeria's per capita GDP which is less than \$400, we doubt if Nigeria is anywhere near the middle-income bracket of the Kuznet's curve estimated by Grossman and Krueger, 1993, 1995; Shafik and Bandyopadhyay, 1992; Seldon and Song, 1994 (they estimated the middle income levels where environmental improvement will be achieved at \$5,000 to 48,000 per capita income).

Grossman and Krueger (1993); Lopez (1994); Antweiler, Copeland and Taylor (2001) have an explicit explanation of the effects of economic growth, trade liberalization and foreign direct investment on environment via the three effects. According to them, technique effects arise from the tendency toward cleaner technology or cleaner production processes as wealth increases and trade expands access to better technologies and environmental "best practices". Composition effects mean a shift in preferences towards cleaner goods while the scale effects refer to increased pollution due to expanded economic activity and greater consumption made possible by more wealth. According to these researchers, trade can affect the environment negatively only through the scale effects. Relating to the inverted U or Kuznets curve the effects, it means that above a certain level of per capita income, technique and composition effects of trade (as defined by Grossman and Krueger 1993; and Lopez 1994) will outweigh scale effects, thus making expanded trade more beneficial to the environment.

Globalization or trade liberalization could affect pollution in three ways- technique effects, scale effects and composition effects. Scale effect means that since pollution or emission is the by-product of production and consumption, increases in scale of economic activity may definitely affect pollution. The technique or method effect implies that different methods of production have different environmental impacts due to the possibility of substitution between different inputs while the composition effect arises from the fact that each good has its polluting tendency, composition of traded goods therefore can determine the extent of pollution.



Empirical evidence on the relative sizes of these effects as well as the gross effects of trade liberalization on environment is rare and almost limited to developed countries. Chua (1999) summarized work on the impact of trade liberalization (under various trade reforms) on pollution and obtained mixed results. Grossman and Krueger (1993) analyzed emission changes for hazardous waste under the North American Free Trade Agreement (NAFTA) with investment liberalization clause involving Mexico, the United States and Canada. He concluded that scale and composition effects of trade on the environment are negative and trade liberalization will increase total pollution for United States, Canada and Mexico. Their results of trade liberalization under NAFTA not involving investment liberalization too produced similar results except that composition effect for Mexico is positive on the environment indicating that trade liberalization has led to a small decrease in total pollution for Mexico.

Strutt and Anderson (1998) tested the impact of trade reform on various pollutants in Indonesia under the Uruguay Round reforms (2010) and under the Asia-Pacific Economic Cooperation (APEC) and concluded that the scale effects of trade is negative on the environment in both cases, however the composition effects of trade liberalization override the scale effect making the total effect of liberalization on the environment positive. Beghin et al. (1995) analyzed the impacts of trade liberalization with better terms of trade (TOT) with the U.S., Canada and Mexico on various pollutants and was able to find a positive scale effect of liberalization on pollution whereas other effects (composition and technique) are negative and the overall pollution effect of liberalization is negative thus making trade openness beneficial for the environment. In another study, Beghin et al. (1998) analyzed the impact of trade reform (in Chile's unilateral liberalization) on various pollutants without decomposing between scale, composition and technique effects and concluded that trade liberalization can lead to between 2.8% to 19.9 percent increase in pollution.

Madrid-Aris (1998) analyzed the implication of trade liberalization under NAFTA on hazardous wastes for Mexico, California and the rest of the United States. In this study, he did not distinguish between scale and composition effect, neither did he estimate the technique effect. He, however, concluded that total effect of trade liberalization on pollution is positive thus making trade liberalization detrimental to the environment. In this same study, he still went further by analyzing trade liberalization under NAFTA with investment liberalization clause on the above-mentioned countries without decomposing between scale and composition effects. He found out a slightly higher positive impact of trade liberalization on total pollution emission. Antweiler, Copeland and Taylor (2001) investigate, how openness to International goods markets affects pollution concentrations. They utilized first theoretical model to divide trade's impact on pollution into scale effect, technique and composition effects. They further examined their theory using data on sulfur dioxide concentrations. They concluded that freer International trade creates relatively small changes in sulfur dioxide concentrations when it alters the composition and hence the pollution intensity of national output. Estimates of their trade-induced technique and scale-effects imply a net reduction in pollution from these two sources.



Combining all the three trade effects yields a somewhat surprising conclusion: if trade liberalization raises GDP per capita by 1 percent, then pollution concentrations fall by about 1 percent thus making free trade good for the environment. Most of these studies though provide insights into the trade -environment issue but failed to properly measure the three effects. Even those who could estimate the scale and composition effects only were able to conclude on the directional impact of trade liberalization on the environment as if it is the compositional and scale effects only that matter. For some authors that estimated the trade-induced change in technique, it is doubtful if their methodologies are adequate to capture this complex variable. Another major issue tactically excluded in the trade-environment linkage is the impact of trade on natural resource depletion. The famous shrimp- turtle controversy of 1996 in which shrimp fishing operation for exports involves the killing of turtles in Asia and Caribbean led to the U.S.' banning shrimp imports from producers that did not use turtle-excluding devices (TEDs) in fishing operations, thus contravening the GATT /WTO convention. Another similar case was the tuna-dolphin case of 1991 in which the United States banned Mexico tuna imports again because the fishing method resulted in the incidental dolphin death.

Our study therefore will, incorporate this problem by analyzing the impact of trade-intensity on natural resource depletion using deforestation as our variable. This method is justifiable since trade exerts much pressure on Nigerian forests and based on the World Bank study of 1990 cited by UNEP GEO (2000) an estimate of annual cost of inaction of eight priority environmental problems confronting Nigeria is estimated as U.S.\$ 5110 million of which deforestation occupies the third position with an annual cost of 750 million U.S. dollars.

III. Review of Nigeria's Trade Policies

Nigeria's trade policies have been short-term in nature and is aimed at securing balance of payments viability and export promotion. Other intended uses include industrialization policy, employment creation and self-sufficiency policies among others. The trade policies can be categorized under pre-SAP era and post-SAP era (Analogbei, 2000). The Nigerian economy was agrarian at independence with a very narrow industrial base. Development plan was then conceived as a means of expanding industrial base (especially for local consumables). To realize this, intensive export of cash crop was embarked upon so as to finance the import implied by the expansion of industrial base. Marketing boards were created so as to guarantee the farmers' ready external markets for their cash crops of cocoa, palm produce, ginger, rubber, groundnuts, etc. other components of exports include some solid minerals, coal and tin. The urge to quicken industrial growth led to higher demands for imports which gave rise to balance of payments problem. Measures put in place to reduce pressure on BOP include exchange control measure, import tariff, import licensing to effect the import substitution industrialization policy, discriminatory custom tariff structure, import prohibition.



The second national development plan (1970-74) which seeks for economic growth via the replacement of destroyed assets (through the Civil War) and the restoration of productive capacity as well as securing equitable distribution of gains of development was initiated. This development plan was also designed to incorporate and enhance the priority areas of the 1962-68 plan. However, due to continued pressures on Nigeria's BOP, restrictive trade policies of the earlier periods were still retained and strengthened. Midway into the execution of the Second National Development Plan, international price for crude oil increased and there was surplus funds for which Nigeria has no immediate internal investment outlet due to the country's low absorptive capacity in 1973. This led to the liberalization of exchange control regulations (CBN, 1979). The National Development Plan (1975-1980) was introduced amid the oil boom but with ambitious plan of enhanced earnings from oil. Trade policies were therefore relaxed (Analogbei, 2000). The fourth National Development Plan (1981-1985) however came when Nigeria was experiencing decline in foreign exchange earnings and the oil shock but due to the upward trend in imports demand the external reserves fell and the BOP position worsened and stricter trade restrictions were introduced but the efficacy of this measure was in doubt as import demand still maintained its upward trend while exports kept declining leading to payments imbalance.

Trade policies during the SAP era was characterized by trade liberalization and the liberalization of the pricing system- with emphasis on the use of appropriate price mechanism for foreign exchange allocation. Second- Tier foreign exchange regime in which market forces determine exchange rate as against the administrative discretion was put in place. Import and export licenses were abolished, export was encouraged and bottleneck such as the requirement that exporters must surrender their proceeds to the CBN were scrapped. Domiciliary accounts for exporters were encouraged. Revised duty drawback/ suspension scheme was introduced. Also introduced were the Export Incentive and Miscellaneous Provisions Decree of 1986, Nigerian Export Credit Guarantee and Insurance Corporation of 1988 (now Nigerian Export-Import Bank-NEXIM). The post-SAP policies also liberalized trade by removing import licensing requirement and instead used customs tariff. The list of items under the prohibition list was drastically reduced. In general, trade policy regimes in Nigeria were well classified based on strategies employed from 1970 to date. 1970-73, 1974-79, 1980-85, 1986-93, 1994-99 (for classification, see Okuneye et al. 2001).

IV. Theoretical Issues of Trade Liberalization and the Environment

The traditional theory of international trade or the classical comparative advantage theory of free trade or classical labour cost model proposed that diverse preferences as well as varied physical and financial endowments open up the possibility of profitable trade. For instance, countries engage in activities for which they are best suited or have a comparative advantage in terms of their natural abilities or resource endowments. Adam Smith, and later other economists have tried to answer what determines which goods are traded by which country in terms of international differences in costs of production (relative costs) and prices of different products. That is, the principle of comparative advantage (which asserts that a country should, and under competitive conditions, specialize in the export of the products that it can produce at the lowest relative cost) – as opposed to absolute advantage. It is therefore the phenomenon of differences in comparative advantage that gives rise to beneficial trade among the most unequal trading partners.



The traditional theory of David Ricardo and John Stuart Mill was simply flawed on the ground of a strictly one-variable-factor (labour cost) approach. The two Swedish Neo-Classical Economists Eli Hecksher and Bertil Ohlin) later incorporate the differences in factor supplies (mainly land, labour and capital) into international specialization.

The neo-classical factor endowment model, known as the Hecksher – Ohlin theory of trade postulates that trade arises because of the differences in labour productivity –which they assume to be fixed – for different commodities in different countries. According to this theory, the basis for trade arises not because of inherent technological differences in labour productivity for different commodities between different countries but because countries are endowed with different factor supplies. Given relative factor endowments, relative factor prices will differ (for instance, labour will be relatively cheap in labour-abundant countries) and so too will domestic commodity price ratios and factor combinations. The above theory therefore explains why resource abundant (for instance labour abundant) LDCs are into the production and export of labour- intensive commodities in returns for imports of capital-intensive goods because of their relative cost and price advantage enhanced by international specialization. Trade therefore serves as an engine for a nation to capitalize on its abundant resources through more intensive production. This can be demonstrated graphically thus:

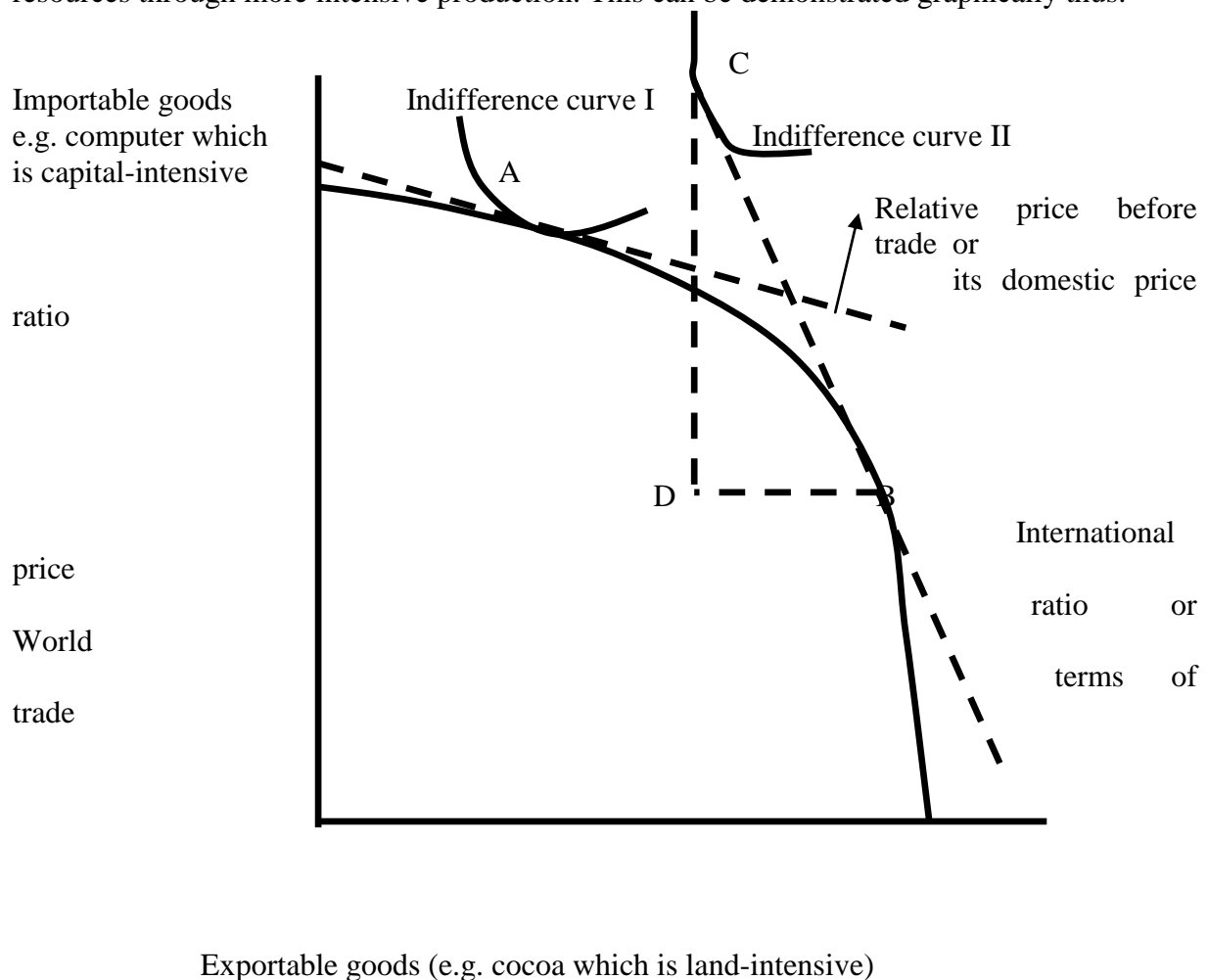


FIGURE 1



The above graph depicts a country relatively well endowed with land and labour, and can produce and consume labour-intensive cocoa and capital-intensive good computer in the amounts depicted in its production possibility curve at point A (without international trade) and the country achieves its greatest utility where her indifference curve I is tangential to its production possibility curve. The slope at A therefore determines the domestic price ratio which is the domestic relative price of cocoa in terms of computer. After international trade, the country can realize the enormous potential benefits to be had from free trade with the other countries of the world in the following way. The world terms of trade is higher than that of this Developing country's domestic price ratio, so she can produce more of its abundant commodity (cocoa) and less of computer thereby selling at point B where world price is tangential to the production frontier – meaning that it can consume more of the two goods at C (where indifference curve II is greater than I). In essence, the country can export BD of cocoa and import DC of computer in the triangle BDC.

What this theory suggests is nothing short of free trade which was equally elicited in the Hecksher – Ohlin – Samuelson (HOS) model, which is a development of the H – O principle and it shows how an increase in the price of a commodity can raise income of the factors of production which is used most intensively in producing it. Samuelson's factor price equalization theorem states therefore conditions under which free trade in commodities narrows differences in commodity prices between countries, in doing so, the incomes of factors of production are also brought in line. In other words, free trade is a substitute for free mobility of factors of production. Based on the H-O-S model therefore, free mobility of factors can lead to national resource movement from places of excess to places of relative scarcity and again the movement of polluting industry from their home countries to developing countries where environmental regulation is a matter of formality (pollution haven hypothesis).

Antweiler et al (2001) made a much clearer extrapolation to the original H-O model of trade. They decomposed the full impact of openness or trade liberalization on environment into composition, scale and technique effects. Their approaches involve both mathematical and geometrical illustrations. In their geometrical exposition, they derived the condition under which trade liberalization for a dirty good leads to less pollution as, if the technique effect (which to them is always beneficial to the environment) can overwhelm the combined scale and composition effects (which to them is always harmful to the environment) as can be seen from the diagram below.

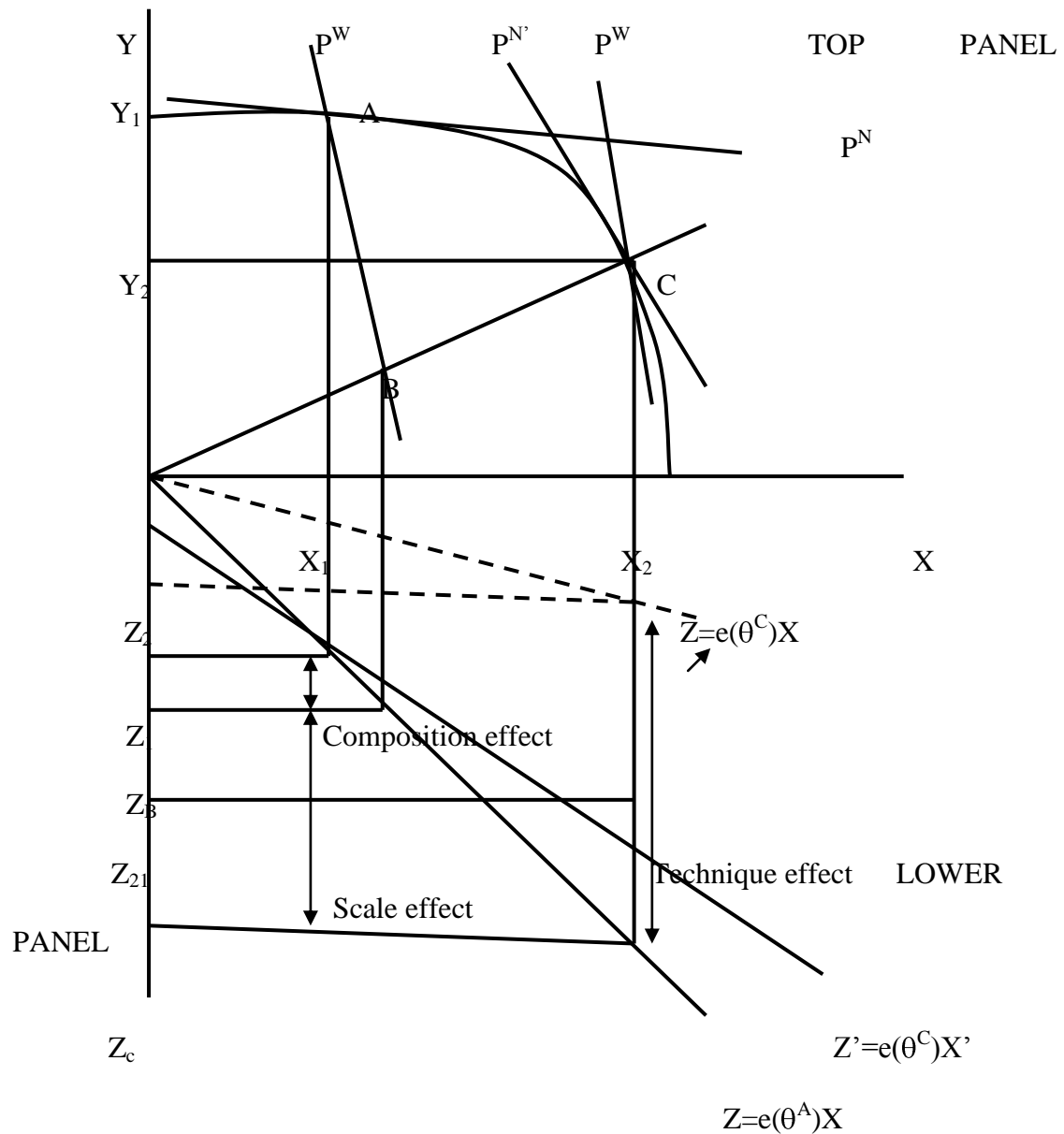


FIGURE 2

In the above diagram, trade liberalization (or reduction in trade frictions) produces the three trade-induced effects which interact to determine the environmental effects of trade. The top panel of figure 2 depicts the production frontier of a dirty good exporter while the bottom panel of figure 2 shows the equilibrium pollution effects of trade liberalization. Without reduction in trade friction, the country settles at point A of his frontier where it achieves its greatest utility and his domestic price ratio or his net price P^N is tangential to his production possibility curve. Since this country is an exporter of the dirty good X, his consumption is less than at point A and is Northwest of A. The economic scale is therefore measured as the value in world prices of domestic output at point A. The pollution level corresponding to dirty good X at point A is Z_1 , which is given by the emissions intensity curve $Z = e(\theta^A)X$.



When there is a decline in trade frictions, the H-O-S model that prices are brought in line due to reduction in friction applies. The effect of this is that domestic price (P^N) approaches the world price (P^W) and production is enhanced as it moves to point C where revenue increases and real income rises and there is a change in the production techniques. However, due to the increase in wealth brought about by a shift from point A to C, a technique effect in which a fall in pollution will be the result (validation of inverted Kuznet's hypothesis) because producers can afford better and cleaner techniques with lower emissions intensity. This is depicted in the lower panel in which pollution has declined from Z_1 to Z_2 . The movement from Z_1 pollution level to Z_2 pollution level can be broken down into three parts. Holding constant both scale of the economy and the production techniques, composition effect of output caused by a movement from A to B in the top panel will produce an increase in pollution of Z_1 to Z_B (that is, trade-induced composition effect). The movement from B to C in the top panel is the scale effect and this gives rise to a pollution of Z_B to Z_C in the lower panel. Lastly, the movement from points A to C means that the value of output measured at the world prices due to trade openness has risen and created real income gain indirectly. This real income gain thus creates the technique effect causing pollution to fall to Z_2 (which is lower than the equilibrium pollution level before trade openness (i.e Z_1)). Based on the foregoing, trade openness seems to be beneficial to the environment (Antweiler et al. 2001).

As interesting as the geometric exposition of the trade and environment issue seems, it is clear that a unique solution cannot be readily gotten on the trade and environment argument. This issue too is recognized by Antweiler et al (2001) in their formal results in proposition 2. However, it is necessary to turn back to figure 2 and superimpose another steeply shaped emission intensity due to a wealth-induced technique change [$z' = e(\theta^C) X'$]. Combining this and the earlier composition and scale effects' outcomes with it produces a different result – trade openness is seriously detrimental to the environment. This can be proved as follows: Composition effect on pollution is positive and given by Z_1 to Z_B . Scale effect too is positive and given by Z_B to Z_C . Composition + Scale = $+(Z_1 \text{ to } Z_C)$, while technique effect is negative and given by Z_{21} to Z_C . Combining our results gives a net increase in pollution level of Z_1 to Z_{21} . The issues raised by most theories of trade and environment include: trade openness improves income level, and developing economies will have ready access to less polluting cleaner techniques thus creating overwhelming negative impact of trade on pollution. What is the extent of this technique effect of trade in each economy and is it only determined by income growth? If the technique effect of trade openness on environment is real, then how do we explain the concept of dumping especially of old and obsolete technology on developing economies? Another issue is: what determines the sizes and direction of composition and scale effects of trade? Must their outcomes on pollution always be positive irrespective of whether it is a developing economy or a developed economy that is being viewed? Lastly, what is the impact of trade liberalization on resource exhaustability? Is the current wave of excessive trade openness good for optimal non-renewable resources utilization?



We believe that this analysis involves which is more realistic of the Porter Hypothesis and the Pollution Haven Hypothesis. The pollution Haven Hypothesis argued that trade and capital movements (FDI) will cause the more polluting industries to relocate to the Southern countries with lax environmental regulations under the wave of globalization which they held could worsen environmental degradation in the Southern countries. the Porter Hypothesis on the other hand states that tighter environmental regulation in the Western economies might lead to research and development, leading to innovation and efficiency, and consequently, cleaner products/ technology exports to developing countries making trade beneficial and sustainable. Generally, most of the issues that cannot be resolved theoretically we hope to shed more light on in our empirical estimate.

V. Data and Methodology

The model to be employed in this analysis is similar to the one utilized by Antweiler et al.(2001). Trade intensity or “openness” is equal to imports plus exports in year t divided by GDP in year t (Antweiler et al., 2000), thus: $(IMP_t + EXP_t) / GDP_t = \text{Trade intensity}$. The composition effect is captured by K_t / L_t where K_t is capital in year t and L_t is labour in year t . Capital is measured as the fixed capital formation, while labour is derived as the product of total labour force and the deflated average minimum wage for all sectors of the Nigerian economy between 1992 and 1999 (this approach is similar to the one utilized by Fabayo, 1987 in which labour is derived as the production and non-production workers. The only difference in our analysis is that for uniformity with capital we went a step ahead to compute their real monetary values.

Scale of economic activity is captured by Real Gross Domestic Product per square kilometer (i.e. GDP / Km^2). In theory the effects of capital accumulation on pollution depends on the techniques of production in place. However, we do not agree with the utilization of income per capita as a good indicator of technique effect, as postulated by Antweiler et al. (2001) that when countries differ in their income per capita, they will also differ in producer prices and hence their techniques of production. We believe that total income gain due to trade may be marred by population figure which may not be reliable. Therefore, we are capturing the technique effect by the real gross national product (real GNP). Our models are specified as:

Model 1:

$$POL_t = \alpha + \theta (EXP_t + IMP_t / GDP_t) + \psi(K_t / L_t) + (RGDP_t / K) + \lambda(RGNP_t) + \mu_t.$$

Model 2:

$$ENVVDG_t = \alpha + \theta (EXP_t + IMP_t / GDP_t) + \psi(K_t / L_t) + \Phi(RGDP_t / K) + \lambda(RGNP_t) + \mu_t.$$

Where POL_t is the yearly quantity of carbon dioxide emission due to flaring and combustion processes in Nigeria only and $ENVVDG_t$ is the level of deforestation in hectares in year t . The data series for estimating models 1 and 2 are gotten as follows: GDP, Import, Export, fixed capital formation, GNP, price indexes and Nigeria land area of $923,768 \text{ km}^2$ are extracted from the Central Bank of Nigeria (CBN) statistical bulletin (2001), deforestation figures (ha/yr) are gotten from CBN annual report and statement of account 2002. Total labour force figures for the years 1980, 1990, 1995 and 2000 are extracted from the World Bank (<http://devdata.worldbank.org>). Other data points were generated linearly. We utilized ordinary least squares (OLS) and generalized least squares (GLS) in this analysis.



VI. Results and Policy Implications

The OLS regression for model 1 indicates that pollution is positively related to trade intensity and real GDP per square kilometre, while capital to labour ratio and GNP are negatively related to pollution thus making trade intensity scale effect negatively related to the environment. However, only trade intensity is significantly related to pollution. The model 2 result indicates that trade intensity, real GDP per square kilometer and the GNP are positively related to environmental degradation making the technique, scale and total effects of liberalization on the environment detrimental. Composition effect of trade liberalization on natural resource utilization is however beneficial. Trade intensity and technique effect of liberalization however significantly explain resource utilization. The Durbin-Watson result for model 1 therefore shows a first-order autocorrelation. The Durbin-Watson result for model 2 is inconclusive and we employed the Lagrange multiplier test, and the LM result ruled it out. However, we still proceeded by applying the generalized least squares (GLS) on model 1 and 2.

Table 1. Results of OLS multiple regression for model 1 and 2.

Variables	1	2
Constant	10.659 (2.126)**	-9750.7 (-0.238)
Trade intensity	18.615 (2.654)***	161291.7 (2.813)***
Capital-labour ratio (composition effect)	-6.191 (-1.563)	-52082.7 (-1.608)
Real GDP/ km ² (Scale effect)	112.538 (0.77)	163687.7 (0.137)
Gross National Product (Technique effect)	-0.00011 (-0.62)	2.6713 (1.858)**
N	22	22
R-squared	0.6214	0.9224
Adjusted R-squared	0.5323	0.9042
F-value	6.975	50.546
DW-value	0.709	1.735

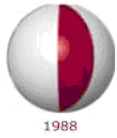


Table 2. Results of GLS estimates for model 1 and 2.

Variables	1	2
Constant	-2.00 (-0.11)	-533549 (-4.14)***
Trade intensity	4.74 (1.87)**	135455.7 (2.9)***
Capital-labour ratio (composition effect)	-9.39 (-2.17)**	-232243.3 (-4.97)***
Real GDP/ km ² (Scale effect)	171.63 (3.25)***	-1904799 (-1.77)**
Gross National Product (Technique effect)	0.00029 (1.72)**	1.03E + 09 (4.18)***
N	21	21
R-squared	0.93	0.96
Adjusted R-squared	0.90	0.94
F-value	38.22	65.70
DW-value	1.62	2.43
Rho	1.07	-0.29
Stationarity status	Non stationary	Stationary
Akaike info criterion	23.53	23.05
Schwarz criterion	23.78	23.35

NOTE: ** means significance at the 95-percent confidence level.

*** means confidence at the 99-percent confidence level.

The GLS method revealed the non-stationary status of our variables for model 1. The rule of thumb criterion states that if 'rho' in a GLS estimate is greater than one, then we should suspect a spurious regression. Based on this, we do not see any need for interpreting the GLS estimates for model 1. The GLS estimates for model 2 however showed that all the independent variables are significant factors explaining environmental degradation. The R-squared and the adjusted R-squared are higher than that of model 1, the joint contributions of the variables in our model is justified by higher and significant F-statistics and the stationarity of the process is again confirmed by our 'rho' value which is less than one. The signs of our independent variables however showed that the composition and the scale effects of trade liberalization is beneficial to the natural resource utilization. However, the technique effect of trade more than offset the joint benefits of scale and composition effects thus making freer trade detrimental to natural resource utilization hence the environment. Comparing our results for model 2 using OLS (table 1) and GLS (table 2) indicate that apart from higher R-squared, adjusted R-Squared and F-statistics, the Akaike information and Schwarz criteria confirmed that estimates of model 2 using GLS is more robust than model 2 estimates utilizing OLS. Based on the non-stationarity of model 1 in table 1 and 2, we therefore presents our Phillip Perron stationary test result and the Augmented Dickey-Fuller unit root test results as follows.

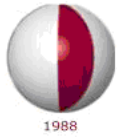


Table 3A. Results of the Phillip Perron stationary test

Variables	Lag truncation	coefficient	No of roots	Phillip Perron test statistics	Mackinnon critical @ 1%
Gross national product	2	-12339	1	-6.1711	-3.8304
Capital-labour ratio.	2	-1.0411	2	-4.5258	-3.8304
Trade intensity	2	-1.4176	1	-6.8399	-3.8067
GDP/KM ²	2	-0.8522	1	-9.2989	-3.8067
Pollution	2	-1.2428	2	-6.0242	-3.8304

Table 3B. Results of the Augmented Dickey-Fuller unit root test

Variables	Coefficient	No of roots	Phillip Perron test statistics	Mackinnon critical @ 1%
Gross national product	-1.8008	1	-5.2347	-3.8572
Capital-labour ratio.	-0.3339	1	-4.5301	-3.8067
Trade intensity	-2.3834	1	-5.5686	--3.8572
GDP/KM ²	-1.6596	1	-5.4925	-3.8572
Pollution	-1.5505	1	-4.0086	-3.8572

Applying the differencing needed to achieve stationarity on the variables in model 1, we then re-estimated the OLS multiple regression on model 1 alone because based on Granger and Newbold's (1974) rule of thumb for detecting spurious regression, model 2 of table 1 and 2 passed the acid test despite the fact that model 1 and 2 have the same independent variables in common. Our understanding of this phenomenon is that the presence of a unit root in model 1 can bias our estimates even though the baseness vanishes as the sample size grows but in the sample that we analyzed, the size of the biasness is sizeable and reliance on its estimates can lead to poor forecast. For model 2 however, the least squares estimator of a unit root is superconsistent and as such, sampling uncertainty in our parameter estimates vanishes unusually quickly as sample size grows (Dieblod,1998). Our model 2 size therefore is good enough for the sampling uncertainty of our parameter estimates to have vanished. The re-estimated regression result for model 1 having taken the first differences of all our variables is as follows:

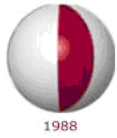


Table 4. Results of OLS estimates for ‘differenced’ variable of model 1.

variables	
constant	-1.19 (-1.62)
Δ Trade intensity	5.005 (1.91)**
Δ Capital-labour ratio (composition effect)	-9.911 (-2.13)**
Δ Real GDP/ km ² (Scale effect)	150.35 (2.74)***
Δ Gross National Product (Technique effect)	0.00023 (1.29)
N	21
R-squared	0.443
Adjusted R-squared	0.303
F-value	3.18 (proba=0.04)
DW-value	1.15
Stationarity status	stationary
Akaike info criterion	4.02
Schwarz criterion	4.27

*NOTE: ** means significance at the 95-percent confidence level.*

**** means confidence at the 99-percent confidence level.*

Our results indicate that all the independent variables except the first difference (changes) of the Gross National Product have significantly explained changes in pollution level. The composition impact of freer trade is positive on the environment contrary to what the theory states. The scale effect is very strong but negative on the environment. This is similar to the theoretical result. The technique effect of trade liberalization is so small but negative on the environment (a confirmation of pollution haven hypothesis) as against the theoretical result of a stereotyped positive impact on the environment. On the overall, the impact of freer trade on the environment is negative. Looking at other results in table 4, we discovered that stationarity has been achieved even though our R-squared and the adjusted R-Squared have reduced drastically. The F-statistics is significant even though the Durbin-Watson result is inconclusive. Based on this reason, we adopted a Lagrange Multiplier test to investigate first and second-order autocorrelation (see table 5A). Our results indicate that there is no first and second-order autocorrelation thus confirming the appropriateness of ‘differencing’ method for model 1.



Table 5A. Breusch-Godfrey serial correlation LM test (Dependent variable = residual)

Variables	Coefficient	t-statistics	probability
Constant	0.387	0.547	0.593
Δ Trade intensity	-1.393	-0.553	0.589
Δ Capital-labour ratio (composition effect)	1.900	0.432	0.672
Δ Real GDP/ km ² (Scale effect)	-6.703	-0.132	0.897
Δ Gross National Product (Technique effect)	-0.0001	-0.589	0.566
Residual _{t-1}	0.395	1.473	0.163
Residual _{t-2}	0.229	0.883	0.392
F-statistics	2.304	-	0.136
Observed R-Squared	5.200	-	0.074

Based on the foregoing, we proposed the followings: Nigeria should examine the challenges, opportunities and constraints they will face in participating in any trade liberalization. In other words, she should be ready to participate actively in future negotiations so as to ensure that decisions on areas where Nigeria exhibits comparative advantage are not compromised. In addition, she should ensure that any trade Act that will jeopardize its environment is not compromised. Trade liberalization must also encourage governments to invest in education and skills, research and development so as to equip people to take advantage of new employment opportunities, and to create adequate safety nets to protect the poor and their environment during the period of trade liberalization.

The Nigerian government must also encourage the conduct of natural resource census so as to ascertain their inventories and enhance effective management. For instance, taking the census will enhance tree harvesting to be done responsibly and sustainably, with minimal damage to the forest and its wildlife through appointed professional foresters. In addition, there is an urgent need for partnerships between citizens, governments and businesses. For instance, in the area of agriculture, organic agriculture can be encouraged – switching to organic practices. It has been shown that the most important type of modification of the environment in Nigeria is agricultural practices, urbanization and hydrological development, fuel-wood cutting, intensification of land use, habitat fragmentation and desertification. Government's major role in this direction includes conservation measures through conservation education of resource users and wider community. There is also an urgent need for the involvement of all stakeholders in the design, implementation, monitoring and evaluation of projects and programmes that are bound to affect their lives.



Moreover, since environmental degradation has wider implications for agriculture, the soil, water and ground-water which are essential for food production and export, food security become severely affected if the environment is not protected. The import of this is that government should enforce environmental laws at all levels of governance so as to halt indiscriminate deforestation, burning of farmlands as well as over-exploitation of flora, fauna, and marine resources since most natural resources are non-renewable. Government needs to review the current trade policies with a view to strengthening the positive aspects of trade and minimizing the concomitant environmental impact of trade. Managed wisely, the new wealth being created by globalisation creates the opportunity to lift millions of the world's poorest people out of their poverty. Managed badly, it could lead to their further marginalisation and impoverishment. Neither outcome is predetermined: it depends on the policy choices by governments, international institutions, the private sector and the civil society. Whatever choice they make should be the one that will be favourable to the environment. Globalisation should be managed in such a way that the new environmental challenges are met through improved access to new, less resource-intensive and less polluting technologies. It is our feeling that it is the government duty to clearly define property rights since well-defined property rights are central to the selection of the optimal pricing of bio-diverse natural resources. Decision makers too must recognize the fact that efficient pricing of bio-diverse renewable natural resources depends on several factors such as: intrinsic rates of biological growth, the carrying capacity of a habitat, interdependence of species, existing market prices, property rights and the underlying timeframe. All these are important in the derivation of an optimal solution on utilization.

Decision makers must also follow strictly the Hartwich- Solow approach to sustainability which revolves around re-investing all Hotelling rents from non-renewable resource (such as crude oil in Nigeria) extraction in man-made capital and that the rent must be as a result of inter-temporally efficient programme. Then the price used in calculating the rents must be "sustainable price". In addition, they should be able to classify certain non-renewable resources as untradeable even under the most liberal trade policy. The main lesson of globalization is that Nigeria must carefully choose a combination of policies that enables her to take opportunities while avoiding pitfalls. Therefore, she must view the pros and cons of complete integration as it may make her more vulnerable. Based on this, it is wiser for Nigeria to engage in a selective and strategic integration with the world market, and she should decide on the way and degree it wants to open up, the timing and sequence of opening up, the form of cooperation and competition between its local firms and foreign firms, the particular sector it wants to liberalize and those sectors that need some protection for the good of the country. Above all, Nigeria must ensure that before liberalization, she has the right and space to review the impact of globalization from time to time.



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ENVIRONMENTAL SCARCITY AND INTRASTATE CONFLICTS: THE CASE OF NEPAL

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The purpose of this paper is to explore the contributing role that environmental scarcity issues play in intrastate conflicts. This paper analyzes the way that the scarcity of renewable natural resources, such as forests and cropland, and water, leads to intrastate conflicts. The linkages between resource scarcity and the state's capacity to provide for its people are also explored. In so doing, this paper poses the question: Do resource scarcity issues lead to security concerns and violent conflict? Nepal serves as a case study to test the hypothesis that natural resource scarcity issues do contribute to intrastate conflict. It is argued here that natural resource scarcity and unequal access to natural resources can be linked to a decline in state capacity and thus to civil strife and internal conflict.

The central thesis within the field of environmental security is that environmental stress reduces social capacity and thus gives rise to conflict. Environmental issues and competition for scarce renewable natural resources become security concerns when they reach a point of crisis, as in the Nepalese case. Environmental scarcity threats and the linkage to state capacity are of current relevance to international local, national, and international actors. This paper aims to contribute to academia and policy making; lessons learned from the Nepalese case can prove useful for the avoidance of future similar insurgencies and internal conflicts.

Introduction

Nepal is poised on the verge of a historic and precarious precipice. Nepal, having suffered from a more than decade long armed conflict with devastating impacts on the social and political foundations of the country, is on the verge of peace. Although in size, Nepal is only 855 km from east to west and 193 km from north to south, and populated by 24.2 million people, it is situated between India and China (please refer to Map 1), having potentially large geopolitical and strategic impacts on world politics. Members of the Maoist insurgents are poised to become part of the mainstream political structure. Yet, if they were to be dissatisfied with the peace process and stage a coup, for example, strong reactions would come from both of its border neighbors.¹ The way in which Nepal chooses to solve its conflict and address the primary and secondary causes of it, certainly has implications for leaders and international security policy experts with interests in countries with similar preconditions; they can potentially learn from the Nepali case, and avoid thousands of unneeded lost lives.

¹ For details on the decade long Maoist insurgency that has led to 13,000 deaths in Nepal, please refer to Michael Hutt, ed. *Himalayan "People's War": Nepal's Maoist Rebellion*. 2004.



Map 1: Map of Nepal



Source: Central Intelligence Agency, 2006.

At the writing of this paper, peace talks between the Maoist talk team and the Seven Party Alliance (SPA) were underway. Although the appointment in August 2006 of Mr. Ian Martin, Personal Representative of the United Nations Secretary-General in Nepal for Support to the Peace Process, (a choice hailed by all parties to the conflict) the inability of the parties to advance on topics such as the role of the monarchy and the management of arms and armies, has led to untenable peace and a future with potential further violence. As these historic negotiations take place and the world community waits to see how and whether Nepal will move forward, it is important for scholars, civil society leaders and others to assess the causes of the Nepali conflict, including environmental scarcity issues.

When roots to intrastate conflicts are traced, it is often the case that there are many interlinked factors. Nepal is no exception: There are important linkages between the historical, economic, cultural, political, social, developmental, and environmental structures and norms of the country. This paper addresses environmental scarcity in the context of population issues, unequal access to resources, agricultural poverty, land holdings, and state legitimacy.



Environmental Scarcity

Acute inequalities, absolute poverty, lack of access to resources and the failure of political structures to address these issues, have made Nepali society extremely vulnerable to conflict and mass movements like the Maoists...²

As Bishnu Upreti states in the above quote, the connection between environmental scarcity and failing political structures can make a society vulnerable to internal conflict. Environmental scarcity incorporates several sources of scarcity into one term; natural resource scarcity; population growth (which leads to a reduction in per capita availability of a resource); and unequal resource distribution (such as unequal land holdings, with more in the hands of elites, for example).

The increase in environmental scarcity is linked both to the decline of the state's capacity to secure basic public goods and an increase in civil violence (the Maoist insurgency) and as a result, in the Nepali case, leaving its state in disarray and inability to provide for its people. Because environmental scarcity causes economic deprivation, it in turn causes institutional disruption, and civil strife; and a potential eventual breakdown of the state.

This is not to suggest that environmental scarcity and related issues are the sole cause of the recent conflict in Nepal, but rather that they can not be ignored. It is argued here that natural resource scarcity, connected to unequal access to natural resources, is one of the central political causes of the Maoist insurgency. A May 2006 study, commissioned by USAID, similarly concluded that "resentment over discriminatory natural resource access is one of the underlying political causes" of the conflict in Nepal.³ Indeed, the increase in environmental stress throughout the Nepali country side, in combination with an increasing population, contributed to a situation of "acute insecurity and instability."⁴

Much of Nepal's land is severely constrained by rugged terrain, and thus the lives of many Nepalese people inhabiting the hilly and often remote areas depend on the surrounding ecosystems and the natural resources therein.⁵ However, these ecosystems tend to be fragile. Flooding and land scarcity has led people to depend on fragile areas. For example, the Midland region is severely deforested and there is a shortage of wood, fuel wood, and fodder to carry out daily life. Floods, landslides and soil erosion are ever present. In many of the hill districts, food supply is short supply and the carrying capacity of the land has been destroyed.⁶

² Upreti, Bishnu Raj. The Price of Neglect: From Resource Conflict to Maoist Insurgency in the Himalayan Kingdom. Kathmandu: Bhrikuti Academic Publications, 2004, p. 281.

³ USAID, "Conflict Over natural Resources at the Community Level in Nepal, 2006.

⁴ Richard Matthew and Bishnu Raj Upreti, "Environmental Stress and Demographic Change in Nepal: Underlying Conditions Contributing to a Decade of Insurgency." Special Report, draft, 2006, p. 1.

⁵ Jugal Bhurtel and Saleem Ali, "The Green Roots of Red Rebellion: Environmental Degradation and the Rise of the Maoist Movement in Nepal." Draft paper, 2006, p. 8.

⁶ L.P. Sharma, "Geography." 1998. As referenced in Matthew and Upreti, p. 6.



Forests have typically been a source of livelihood for many Nepalese, through the provision of food, medicine, wood, and animal feed. In the Terai region, tropical hardwoods have had commercial value, but there are few resources left, due to illegal harvesting. Reportedly, Maoists have demanded a “tax” (ranging from 2% to 50%) on each harvested product by individuals and logging contractors with government harvesting permits.⁷ (Ironically, Nepal’s success in community forestry initiatives has been hailed throughout the world. While an impressive 13,300 forest user groups have been identified, with 1.1 million hectares of forest land under management, the poor are not benefiting.) According to a USAID study, research indicates that “socially dominant and relatively wealthier villagers capture most of the benefits from community forests, while poorer...members bear a disproportionate share of the management costs.”⁸

A similar situation can be evidenced with water resources; large landowners own the land, while poor farmers who do not own irrigated land, farm the land of the large landowners. Rivers flow out of the Himalayas, supplying large quantities of water to Nepal. Historically, Nepal has had several government institutions and procedures that work to manage irrigation and water distribution.⁹ Many of the rural households have limited supply of water: Women and girls must often walk long distances each day to fetch water. Further, people from the *Dalit* caste are prohibited by religious belief to take water from the same source as others within the community.¹⁰

In 1911, the population in Nepal was 5.6 million persons, while in 2003, it had increased to 24.1 million.¹¹ The population growth rate in Nepal was at 2.25% in 2001, and total fertility rate was at 4.1. According to the World Bank, approximately 50% of the population in Nepal tries to make ends meet on \$1 US a day.

Unequal Access and Distribution of Resources

It is argued here that another factor that promoted the conflict in Nepal was economic motives of the elite and the exploitation of natural resources by powerful groups. Because the rich and elite class has traditionally had a loud and successful voice in policy making in Nepal, they have been able to maintain dominance and keep the peasants at the low end of the class and caste system. And as a result, Maoists strategically and conveniently found peasants, as a group, a useful set of ears to fertilize their promises of better economic, social, cultural, and political policies to benefit all Nepalese. “Initially, the insurgents chose the Mid-western hills...to begin their war because the location is remote...and an oppressed ethnic population was an easy recruitment option for the Maoists...”¹²

⁷ USAID, vi.

⁸ Ibid., vii.

⁹ For example, Farmer Managed Irrigation Systems, Government Managed Irrigation Systems, and Irrigation Water Users Associations. From USAID, p. vii.

¹⁰ USAID, p. 8.

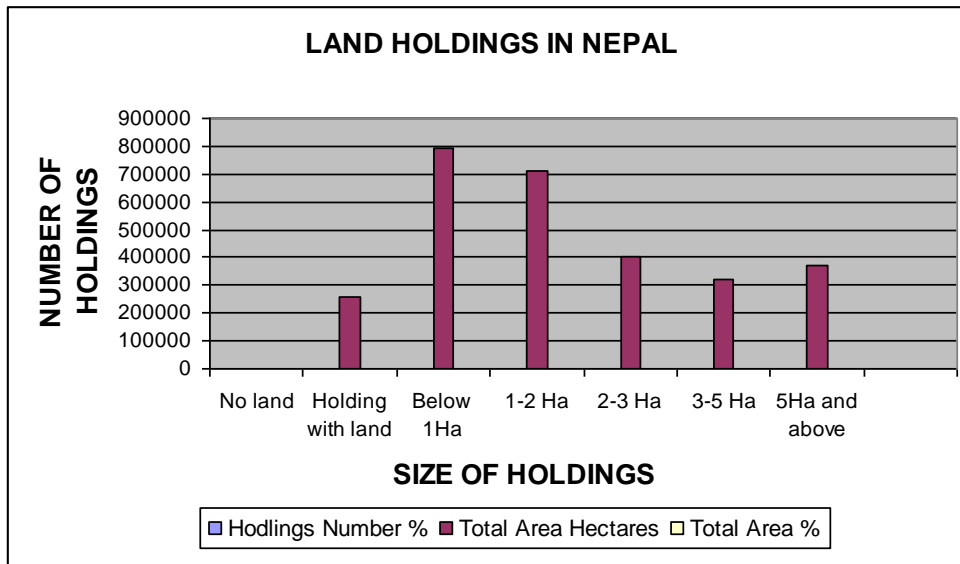
¹¹ Central Bureau of Statistics, 2002. p. 3.

¹² Bhurtel and Ali, p. 7.



Unequal resource distribution can be viewed as a factor that led to the Maoist insurgency and subsequent violence. In a recent academic workshop facilitated by the author, parties to the Nepali conflict agreed that unequal distribution was indeed a historical and current factor that needed to be solved in order to avoid similar unrest festering in the country side. The Nepali population can roughly be said to live in three main areas; the Mountain region (7.3% of total population living here); Hill region (44.3%); and Terai region (48.4%), according to the 2001 Census. Nepal is a “resource-thin country”¹³ making it difficult for the population to depend on its resources for a living. While 90 percent of the population relies on subsistence agriculture, only 20% of the land is arable¹⁴ and many of the peasants do not have secure land titles. In fact, close to 69% of land holdings are less than one hectare, making it nearly impossible to make a living. Most land holdings are small and dispersed as evidenced in Table 1 below.

Table 1: Land Holdings in Nepal



Source: Rizal and Yokota, 2006.

Table 1 depicts that almost 70% of the land holdings are less than one hectare. As pointed out by Matthew and Upreti, the *Nepal Human Development Report 2004* indicates that the lower 47% of households only own 15% of the total arable land, while the top 5% own approximately 37%. Clearly, the distribution of land favors the elites; land distribution is one of the issues that the Maoist leaders say exemplifies inadequate and unfair government policy. Table 2 depicts the unequal land distribution in Nepal.

¹³ Matthew and Upreti., p. 4

¹⁴ Dhurba Rizal and Yozo Yokota, *Understanding Development, Conflict and Violence*. 2004, p. 262.



Table 2: Land Distribution by Farm Size in Nepal, 2001/2002

Land Distribution by Farm Size in Nepal, 2001/2002

<i>Size of Holdings</i>	<i>Holdings</i>		<i>Total Area</i>	
	<i>Number</i>	<i>%</i>	<i>Hectares</i>	<i>%</i>
No land	32109	1.2	1571	0.1
Holding with land	2703941	259400	99.9	98.8
Below 1 Ha	1877702	68.8	791883	30.5
1-2 Ha	529467	19.4	716533	27.6
2-3 Ha	168449	6.2	400227	15.4
3-5 Ha	88165	3.2	328089	12.6
5 Ha and above	40158	1.5	360669	13.9

Source: Rizal and Yokota, 2006, p. 276.

According to research conducted by Rizal and Yokota, the correlation between inequitable land holdings and Maoist violence can be linked directly. This correlation of misdistribution of land and political violence can also be traced to similar insurgencies in Nicaragua, Peru, Chile, and El Salvador (Packenham 1992; Paige 1975). For Nepal, Rizal and Yokota conclude that

The development regions, ecological belts and cluster districts, where the number of holdings and average holding size in low, the Maoist influence, consolidation and violence seems maximum...Concentration of land in the hands of few elite classes and severe exploitation of the peasantry through the excessive expropriation of labour and land revenue has been the principal policy adopted by the rulers through much of the nations' history.¹⁵

Historically, the *Panchayat* system, that was introduced in Nepal in 1962 when the King ruled democratically with the support of councils, or *panchayats*, did little other than keep the feudal structure in place, leading to further disparities among the different Nepali regions. In fact, the semi-feudal economic structure, combined with livelihoods based on subsistence agriculture, essentially ensured that rural areas would be unable to develop. Meanwhile, the political elite were able to neglect the realities of the rural level, thus "providing the poor with no tangible redress of their frustration."¹⁶

Table 3 shows the linkage between poverty and farm size in the three regions of Nepal; the concentration of poverty is higher in landholdings below 0.5.hectares as compared to those up to 1.0 hectares.¹⁷

¹⁵ Rizal and Yokota, p. 278.

¹⁶ Ibid, p. 276.

¹⁷ UNDP, *Economic Policies, Poverty and Human Development*, 2006, p.233.



Table 3: Poverty Incidence by Farm Size

Poverty incidence (%)	
Mountains	
Below 0.5 hectare	77.8
Between 0.5 – 1.0 hectare	67.3
Below 1.0 hectare	73.1
Above 1.0 hectare	39.7
Hills	
Below 0.5 hectare	70.3
Between 0.5 – 1.0 hectare	64.3
Below 1.0 hectare	67.5
Above 1.0 hectare	51.0
Terai	
Below 0.5 hectare	39.7
Between 0.5 – 1.0 hectare	32.3
Below 1.0 hectare	37.6
Above 1.0 hectare	23.6

Source: UNDP, 2006.

USAID similarly concluded that social inequalities can be traced to historical factors that include cultural, religious, caste structures, and feudal rule. The resentment among the groups and the bottom rungs of Nepal society festered and grew for centuries.

“Social inequality is comprehensive, including disparity of access to livelihood resources, government services, and economic opportunity.”¹⁸

How does environmental scarcity, linked with poverty and social inequality, lead to civil strife? It has been argued that the Maoist rebellion was simply a political movement, resulting from poverty among the rural population.¹⁹ An online conference organized by the Program on Humanitarian Policy and Conflict Research at Harvard University, for example, identified only political, legal, social, economic, and ethnic factors as the main causes of the conflict. Environmental causes were not included.

¹⁸ USAID, p. v.

¹⁹ Bhurtel and Ali, p. 2.



However, the scarcity of natural resources and the unequal distribution of resources can be linked to the Maoist insurgency in at least five important ways. 1) *Underlying cause*; resentment over discriminatory natural resource access is one of the underlying political causes, helping to attract early Maoist recruits; 2) *Funding Source*; Maoist military operations are funded partially by taxes on natural resources; 3) *Refuge*; Forests provide bases of operation and refuge for Maoists which leads to restricted access by rural farmers; 4) *Altered Dynamic of Natural Resource Use and Conflict by User Groups*; the insurgency has made proper management of forest and water resources near impossible, given that there is fear, distrust, and insecurity on the part of users. Government rules have essentially been dismantled by Maoists and conflicts among the users have become chronic; 5) *Forest Management and Biodiversity Conservation Disruption*; the government has been unable to enforce management laws, leading to forest degradation and poaching.²⁰

This paper will now turn to the discussion of how the legitimacy of the state and its capacity to provide for its people, such as ensuring equitable land distribution and access to natural resources, is linked to the above discussion and to the Maoist insurgency.

Linkages between Resource Scarcity and State Capacity

The lack of the Nepalese Monarch's legitimacy and its inability to cope with both the insurgency and the environmental pressures put on the Nepali population helped lead the way to near and total state disarray. Thus, Nepal's lack of state capacity, as a function of legitimacy, internal coherence, and responsiveness,²¹ certainly led to civil violence. To what extent does the state's capacity to cope with environmental pressures and the regimes legitimacy determine its capacity to provide legitimate goods to its people? State capacity incorporates the distinct concepts of state effectiveness (in terms of order and organizational capacity) and state legitimacy (in terms of authority).²² State capacity is viewed by the Project on Environmental Scarcities, State Capacity, and Civil Violence as "a function of variables such as the state's fiscal resources, political autonomy, legitimacy, internal coherence, and responsiveness."²³ The findings from this study that are applicable to the Nepal case are that,

- Environmental scarcities do increase financial and political demands on the state;
- Resource scarcities affect the state via their effects on elites;
- Predatory behavior by elites can evoke defensive reactions by weaker groups that directly depend on the resources in question; and
- If resource scarcity affects the states overall productivity, tax revenues to local and national governmental can decline.

• Environmental scarcities, as in Nepal, can indeed

...affect a number of the variables measuring state capacity. It can directly constrain a state's fiscal resources, and by encouraging predatory behavior by elites, it can reduce state autonomy. Rivalry among political elites reduces coherence, and competition among groups over resources weakens civil society.²⁴

²⁰ Ideas outlined in USAID p. viii.

²¹ Thomas Homer-Dixon, *Key Findings*, 2001.

²² Jack Goldstone, et al. *State Failure Task Force Report: Phase III Findings*, 2000, p. 52.

²³ Homer-Dixon, p.1.

²⁴ Ibid, p. 2.



The combination of competition over natural resources and rivalry among different members of the Nepalese society helped lead to the state's inability to respond to and to supply basic social goods in terms of clear and fair property rights, and an effective and fair judicial system.

In the spring of 2006, the world held its breath and watched the Nepalese people demonstrate in the streets. Would Nepal pull itself from where it had sunk? Would Nepal become a failed state? Or would Nepal march towards historic compromise. The initial answer is that Nepal, after the dust settled, pulled itself back from failure, remarkably so. The final analysis can not be rendered, however, as peace negotiations and agreement details are presently underway. It remains to be seen whether the Maoists' and the Seven Party Alliance can manage to find an acceptable solution that leaves everyone confident and trusting, and resources more equally distributed.

Without the involvement of the peasant population in all areas of society, including agricultural policies, land policies, and the development of rules and laws, peace will remain fragile rather than solid and sustainable.

As the *Economist* magazine reported in the October 10, 2006 issue, presently the Nepali "...state is hardly functioning...This has been a boon for the Maoists...Until the government can re-establish itself, the Maoists will continue to grow stronger."²⁵ Meanwhile the leader of the Maoists, at present, is "arguably the country's most popular politician now."²⁶ This indicates that the demands of the Maoists have resonated with the majority of the population of Nepal. Roots of the insurgency can be traced, in part, to environmental disparities, including lack of access to land and natural resources. It is no surprise that the insurgency gathered momentum and willing recruits in the countryside, among the peasant population. Whichever path Nepal takes, a lesson can be learned within the scholarly and policy communities alike, that environmental scarcity issues should not be ignored when analyzing direct and indirect causes to complex national conflicts.

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²⁵ "Judged by the People." *The Economist*, p. 64.

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AS AN INTERNATIONAL ACTOR OF ENVIRONMENTAL REGIME INFLUENCES OF EU'S ENVIRONMENTAL POLICIES ON TURKISH ENVIRONMENTAL POLICIES

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International environmental regime is necessary for protecting the environment. This is because the EU expect from candidate state to harmonize its environmental policy in the within EU standards of nominate. Turkey, as a country negotiation membership with the EU, needs to Turkey EU's environmental policy harmonization its environmental policy

The main purpose of this study

This study aims to outline the possible implications of Turkey's negotiation with EU and adaptation of Turkish environmental policies with EU.

The methods of this study

In order to accomplish the main objectives of this study outlined above, the methods selected for this study is mainly to collect and evaluate official, local and international document concerning the topic. In this study, the main characteristics of Turkish Environmental policy, Turkish environmental policies and the expectation EU within EU document (EU Expanding strategy, joint participation document, progress report) will also be examined.

Results and discussions

This part constitutes that Turkish environmental policies is insufficient compared with EU environmental policies. Yet, this study also argues that there shall not be only an international environmental regime? After analyzing and comparing Turkish environmental polices with that of new EU members, it can be concluded that Turkey's position does not seem to be bad.

Introduction

Recently, environment is amongst the significant areas in international relations. International relations and actors are important elements in preserving, revival, and strengthening of the environment since the environmental issues effect the world globally and the problems should also be tackled with globally. Moreover, it is clear that international environmental regime is very effective in preserving the environment.

After the collapse of Soviet Unions, USA became the leader of a uni-polar world. International organizations such as World Bank, IMF, World Trade Organization, UN, and regional cooperation organizations such as OECD, and ultra national organizations such as European Union (EU) are among the effective institutions of the new world order. These organizations realize the duties of taking decisions, application, and checking these decisions about this new world order. In addition to create a strong international public opinion, these organizations carry out strong tools of authority and application of necessary policies.



Nowadays, especially aftermaths of USA's keeping himself away from environmental issues, EU got a position of leadership, alongside with its policies in the process of Kyoto Protocol, in preserving environment and producing new environmental policies. As one of the most important actors of creating international environmental policies, it is obvious that, EU will influence Turkish environmental regime. In fact, there are two aspects of this influence. Both the current situation of candidate states and EU's expectations from these states are important aspects of this issue.

The Concept of International Environmental Regime

Environmental regime unifies the expectations of the international actors which determine the principles directly or indirectly, norms, and other means of decision making procedures (<http://centreforforeignpolicystudies.dal.ca>, 2006).

International environmental regime began within 19th century as a result of developments of international environmental agreements, international cooperation on environment. During the time, the concept of environmental regime shifted from non-official international sayings towards more official and international cooperation and organizations (<http://centreforforeignpolicystudies.dal.ca>, 2006).

Recently, a lot of environmental rules and organizations have emerged and currently environmental regime is being defined as a younger and more dynamic concept (<http://hei.unige.ch>, 2006).

International environmental regime is set up to cope with certain environmental problems (www.gecko.ac.uk, 2006). This international environmental regime gets its authority from international agreements, especially from the multinational agreements (<http://centreforforeignpolicystudies.dal.ca>, 2006). Recently, a lot of agreements have been signed for the solution of environmental problems and preservation of natural resources (www.gecko.ac.uk, 2006).

There are certain institutional elements, such as UNEP, within the international environmental regime (<http://centreforforeignpolicystudies.dal.ca>, 2006), and multilateral environmental agreements are the chief actors of international environmental regime (www.yale.edu, 2006).

Currently there are certain debates on the influence and effectiveness of international environmental regime. Alongside some positive examples, (North Sea and the wider North-East Atlantic (NEA-Regime) of EU directives (www.ecologic.de, 2006), there are some negative impressions such as ineffectiveness of these regimes. According to the supporters of this view, 4 points should be taken into consideration, in the short term, for the success of international environmental regime (<http://hei.unige.ch>, 2006).



- 1-Inefficient promises of the government (inability to adapt to the domestic law, inability to apply efficiently)
- 2-Separation/dissolution/breaking of international environmental regime (setting up different standards in the national level)
- 3-Limited authority of UN/UNEP
- 4-Structural/institutional Disharmony between environmental and other regimes (lack of necessary mechanisms and power of international environmental regimes)

Moreover, there is a great need to make clear regulations for coordination and cooperation among more than 500 international agreements, regulations, and environmental organizations. For this purpose, for instance, a worldwide environmental organization (World Environment Organization), as demanded many times by France, can be established. On the other hand, a strengthened international environmental administration and consistent, sufficient, and efficient international environment regime decrease the current cost, enable participation of administrative bodies, and gathers all of the dispersed elements (<http://hei.unige.ch>, 2006). According to another view, a strong international environment regime can only be realized by the cooperation of USA and EU (www.yale.edu, 2006). For example, as in the case of Kyoto Protocol, as a economic and military power USA may restrict the application of any international agreement when he doesn't approve it (Falkner, 2005: 591).

EU as an Actor of International Environmental Regime

It is a fact that environmental problems are international issues. Trans-boundary questions can only be solved by international trans-boundary methods and tools.

Now, EU is also an international main actor in environmental issues as well as USA. European Commission, promoted EU as the forerunner of leadership in international environmental problems by the union's directive at January 2002. This development shifted EU's position from an organization which makes only regulations within the union's area to the organization that makes regulations in international arena. Afterwards, the existence of EU, in environmental topics, was noticed in international platforms. Hence, EU began to export both environmental arrangements and concepts and, in addition to implementing principles, it got power to realize and apply these principles (www.field.org.uk, 2006). Consequently, USA's patronage in environmental issues up to beginning of 2000s has transferred to the EU since 2003s (Falkner, 2005: 594). Nowadays, EU seems to be captured the international the leadership of sustainable development (Falkner, 2005: 585).

As an international actor, what is the dose of EU's power, in the sphere of environment? (Zito, 2005: 363).

Complex structure of EU is reflected on its environmental policies as well (Zito, 2005: 368). As a global actor of environment, EU utilizes this complex situation (Zito, 2005: 369). For example, for the solution of complex issues, it is for the benefit of EU that 25 different countries have different views and ideas. This complex structure of EU enhances the potential role of EU in international meetings of environment (Zito, 2005: 370).



EU is a global leader and an active actor in the world's events and meetings. As an international negotiator/partner EU has a role of global leadership. EU, despite the lack of its military power, is a civil power because of its economic sources. Moreover, it is a forerunner in the fields of key norms of modern society such as democracy, and freedom (Zito, 2005: 363). In the events of preserving the ozone layer and the process of Kyoto, global leadership of EU is understood clearly (Zito, 2005: 371). EU presents a reformist approach in the solution of global complex environmental problems such as the permissions of marketable pollution that was mentioned in Kyoto process (Zito, 2005: 372). EU, as an economic market, can set up global standards by its environmental regulations. For example, EU countries and commercial companies ask from foreign countries and companies to adapt EU's standards, for instance about the use of chemicals, in order to enter into EU market (Zito, 2005: 373). On the other hand, international agreements influence EU at the minimum level, and they don't coincide with the environmental acquis of EU which is a supranational power (Kellow and Zito, 2002: 45). EU influences other international actors as a model and trainer (Zito, 2005: 374).

Acquis of Environmental Policy: A Framework for Turkey's Environmental Policy

From the beginning of the summit of EU Ministers of Foreign Affairs, in Luxemburg in October 3, 2005, there are four major official documents that guide Turkish environmental policies. These are Negotiating Framework,²⁷ The Commission's 2005 Strategy of Enlargement Document²⁸, Turkey 2005 Accession Partnership²⁹, and Turkey's 2005 Progress Report³⁰. Before these official texts, EU Commission has published certain official reports that effect Turkish environmental policy³¹. However, after the beginning of negotiations, Turkey's criteria, documents, and evaluation reports of the Union will determine the acceleration or slowness of full membership of Turkey. Actually, with a similar situation Turkey has never met. Likewise, the first principle of Negotiating Framework says that;

“The negotiations will be based on Turkey's own merits and the pace will depend on Turkey's progress in meeting the requirements for membership.”

Therefore, those four official documents will be analyzed briefly, and the previous ones will be mentioned when necessary.

²⁷For the Turkish translation of this document see; <http://ekutup.dpt.gov.tr/ab/muzakere/cerceve.pdf>, 11.02.2006

²⁸Brüksel 9 Kasım 2005(COM 2005)561. for the nonofficial Turkish translation see; http://www.abgs.gov.tr/uploads/files/2005_genisleme.pdf

²⁹For the Council Decision proposals see; SEC (2005) 1426, Brüksel 9 Kasım 2005 COM(2005) 559, for the official text see; Accession Partnership with Turkey, Council Decision OJ L22 26.1.2006, p.34

³⁰SEC (2005) 1426 Brüksel, 9 Kasım 2005, COM (2005) 561 final. For the Turkish translation see; www.abgs.gov.tr

³¹See; Uğur Yıldırım, Sevim Budak: “*AB Çevre Politikasında Son Gelişmeler ve Türkiye Üzerine Bir Değerlendirme*” Türkiye Avrupa Birliği İlişkileri, Ed.Harun Arıkan, Muhsin Kar, Seçkin Yay., Ankara, 2005, pp.469-500.



Negotiating Framework

In October 3, 2005 EU signed the “Negotiating Framework” which determines the basic principal of membership negotiations with Turkey. In point of fact, this document based on the decisions of the December 17, 2005 summit and it is shaped by the developments and the attitudes of the member countries during the process.

Negotiating Framework, which is consisted of 23 articles, is composed of three sections as; the principles that regulate the negotiations, the essentials of the negotiations, and the methods of negotiations.

In terms of Turkey’s membership, 2. article of the Negotiating Framework is very significant that it says as; “*The shared objective of the negotiations is accession.*” This explanation states the beginning of a procedure that would be awfully difficult and would need a long period of time, yet, at the and it would result in a whole transformation of the country.

Negotiating Framework is evaluated as a *reconciliation text* which was obtained by the *certain* demands of the interested parties. It was very difficult for the Union to prepare a manuscript that answers, in one respect, the demands of 25 member countries and on the other hand it responds to the expectations of Turkey. For that reason, there are *gray areas* which are open to different interpretations within the framework manuscript. In order to be able to continue the membership negotiations in a convenient platform, first of all, these subjects should be clarified.³² These topics are evaluated under three titles below.

1-Endurance Capacity of EU

3rd article of Negotiating Framework mentions that in the enlargement process of EU should keep its policy of growth and enlargement strategies and the endurance capacity of Turkey should be taken into consideration. And, this should be examined by the Commission during the process of enlargement. It is stated within the results of Copenhagen Council of Europe, dated June, 21-22 1993 that “*it is an essential issue that while Europe keeps its unification haste, it should consider both the endurance capacity of new members and the general interests of the candidate countries.*” According to this point, candidate countries should meet the necessary principles of Copenhagen Criteria and they should adapt themselves to these standards. Moreover, the candidate countries’ endurance capacities should be evaluated as well.

³²<http://www.ikv.org.tr/pdfs/a6b748af.pdf> , 14.02.2006



Even if this article, which doesn't include any principle about the membership of Turkey, was not included within the Negotiating Framework, every time it might be put into agenda in relation with 1993 decisions. The reason of emphasizing Negotiating Framework particularly is that because of measures, population, economic conditions, and similar factors, Turkey has a potential which may cost to the Union a lot and hence she must revise her certain policies (**such as environmental issues**). Under this circumstance, the Union may claim that Turkey is not ready for the membership even if she could meet all of her obligations.³³ For this reason, it should be clarified within the process that what are the factors that determine the endurance capacity of EU; how are they evaluated; and what should Turkey do for the full membership after the negotiations completed.³⁴

2-Points of Comparison

In the beginning and end of every negotiation title EU pays attention to the points of comparison, especially for Croatia and Turkey, since it carries certain negative experiences within the procedure of 5th enlargement process. Yet, it is not stated that when comparison points for the closure would be determined. To prevent this type of uncertainties it is better to determine the comparison points of closure for the each title of negotiation at the beginning. If this can not be managed at the beginning, then, at least main principles of date should be clarified as earlier as possible.³⁵

3-Financial and Technical Aid

This subject is not anyway clearly stated within the Framework Document. It is known that pre-membership financial aids were far away from meeting the needs of Turkey. EU authorities, during certain occasions, declared to compensate this issue during the membership process. The problem of financial aid will be clarified after the approval of EU's 2007-2013 financial perspective. For this reason, financial and technical aid should³⁶ be designed in accordance with the requirements of enlargement negotiations and specific needs of Turkey.³⁷

When the negotiating framework examined carefully, it is understood that EU member countries have an anxiety about the membership of Turkey. Even, it can be accepted as an advantage to be aware of certain possibilities, at the beginning of the process, as an early warning which can be interpreted as a technique of negotiation. From this point of view, in the study of the negotiation frameworks, threats and opportunities should be perceived very well and the challenges need to be transformed into the opportunities.³⁸ But, Turkey's one sided will is not enough for the good management of the process. EU side also should be stable and constant for Turkey's membership and AU public opinion should eliminate prejudice about Turkey. In this subject, a framework published by EU, in 29 June 2005, about intercultural dialogue and 8th principle of Negotiating Document are critically important. According to this; parallel to accession negotiations, the Union will engage with Turkey in an intensive political and civil society dialogue.

³³ This work is interested in the adoption of the environmental laws.

³⁴ <http://www.ikv.org.tr/pdfs/30ca8de1.pdf> 13.02.2006

³⁵ <http://www.ikv.org.tr/pdfs/a6b748af.pdf> 14.02.2006

³⁶ Especially financial aids for the environmental protection.

³⁷ <http://www.ikv.org.tr/pdfs/a6b748af.pdf> 14.02.2006

³⁸ <http://www.ikv.org.tr/pdfs/a6b748af.pdf> 14.02.2006



The aim of the inclusive civil society dialogue will be to enhance mutual understanding by bringing people together in particular with a view to ensuring the support of European citizens for the accession process. As a result, Negotiating Framework document will be one of the significant manuscripts which would regulate the relationship between Turkey and EU for the future 10 years. On the other hand, there are a lot of frameworks which display obviously that the Union will not be kept unchanged during this 10 years period. Moreover, Turkey will not be in its current point after 10 years, too. Hence, it should be noticed that Negotiating Framework is prepared by the current EU and for current Turkey. And Turkish environmental regulations should be reshaped in order to meet the future ten years conditions. This subject matter is stated in the Framework document.³⁹

Above mentioned Negotiating Framework Document has more specific principles concerning our subject of study. The following interpretations can be made according to these principles.

For instance, according to the 10th principle of Negotiating Framework Document; ***“Accession implies the acceptance of the rights and obligations attached to the Union system and its institutional framework, known as the *acquis* of the Union.”*** This principle implies that together with all of other regulations, Turkey should agree with all environmental acquisition as a requirement of the Union’s environmental policies. According to the same principal, moreover, Turkey will have to apply this as it stands at the time of accession (mostly said as the year of 2014). The rest of the same principle states that, in addition to legislative alignment, accession implies timely and effective implementation of the *acquis*. In this case the argument which should be troubled is that until now, EU’s environmental regulations is not tested whether they are effective or not to protect the environment of Turkey. Structural and bureaucratic problems that can be met in the application also should be taken into consideration. Because, the public authorities, responsible from environmental protection, have no ability and experience to be able to understand the directions and regulations above 300. Consequently, Turkish environmental law, which is translated and adopted in pieces, is not understandable both by the polluters and the society very well. This circumstance will decrease the applicability and productivity of the regulations and it will stay as a potential difficulty for Turkey during the accession negotiations.

³⁹ According to the 9th principle of Negotiating Framework Document, Turkey must accept the results of any other accession negotiations as they stand at the moment of its accession.



Another principle of the Negotiating Framework Document about the environmental protection is stated in the 16th principle of the Document. Accordingly, *“The EU points out the importance of a high level of environmental protection, including all aspects of nuclear safety.”*⁴⁰ this principle requires that each environmental regulation and law in Turkey should be prepared in a manner that firstly it must strive for protection of the environment. It means that Turkish environmental regulations must serve only for the higher level protection of the environment. First of all the environments should be protected or it should be protected with the utmost priority, and the economic interests should be adapted to the environmental interests. We don’t know whether Turkey is ready for this principal or not. Again, related with this context, we believe that Turkey will often apply to the Documents 12th article which is about transition arrangements. But, it should be notices that particular adoptions of *acquis* and transition arrangements will be very restricted in terms of time and context, and they can be approved if they are mentioned clearly in a plan which accepted officially.

Turkish Environmental Policy According to 2005 Strategy of Enlargement

According to Turkey’s 2005 Strategy of Enlargement Report published by European Union⁴¹, Turkey has achieved significant legislative progress in many areas, but in many areas Turkey is behind in the progress. Therefore, in these areas Turkey needs furthermore progress and reformations. The topic of “environment” is also included within the Strategy Document.

According to the Strategy of Enlargement Document⁴², Turkey displayed a **limited progress** about environment. In addition, it is written that some progress has been made in the field of **waste management, in the noise sector** and nature protection. Limited or no substantial progress has been made with regard to transposition of the *acquis* in the other environment sectors. Weakness of the application is perceived anxiously within the Union and this is still source of a major concern. Trans-boundary issues under the environmental *acquis* and international conventions, to which the Community is a party, require particular attention. Turkey needs to take steps⁴³ to integrate environmental protection requirements into the definition and implementation of all other policies, and to promote sustainable development.

⁴⁰Within the framework of negotiation process, together with the adoption of the infrastructure which would minimize the environmental risks, certain establishments, which threaten the environment, would be closed down. For instance, in the 5th enlargement process, it is decided to close down some nuclear plants of candidate countries by the financial aid of EU. Moreover, it is emphasized that the membership of Czech Republic should be vetoed if it doesn’t stop the activities of Temelin Nuclear Plant. As a solution, it is decided, with Melk Process, to develop the technical assistance between two countries and to set up an early warning system for the emergency. And a detailed environmental evaluation report was prepared for Temelin Nuclear Plant. In fact, member countries are free to choose which type of energy resources including nuclear energy. But, in accordance with the adoption of *acquis*, the candidate countries are required to; (i) to increase the reliability of the nuclear plants, (ii) to eliminate the nuclear wastes in a convenient manner and to apply the measures of Euratom about the nuclear components. See., <http://www.ikv.org.tr/pdfs/30ca8de1.pdf> 13.02.2006

⁴¹See Brussels November 9, 2005 COM (2005) 561, p.5

⁴²See the same document, p. 34.

⁴³What is intended to mention here are the policies such as energy, industry, transportation, and tourism which can effect the environment?



Turkish Environmental Policy according to Turkey 2005 Accession Partnership

Accession Partnership for Turkey firstly accepted in 2001 by the Council of Europe. In May 2003, a revised Accession Partnership report was signed. At the moment, other than the current report, another revised Accession Partnership report was prepared and published in official gazette of EU in January 2006. The purpose of Accession Partnership is to help Turkish authorities in meeting the requirements of partnership. The precedence of the Accession Partnership is to meet these requirements within a few years and to manage further developments. A division is made between the short term priorities to be realized within one or two years and medium-term priorities to be realized within three or four years.

There are principles, suggestions, and conditions about short and medium term priorities about “environment” within the proposal of the Council decision which is prepared in accordance with decisions of EU Commission, dated 9 November 2005, and report of Turkey Accession Partnership.⁴⁴

Determinations and suggestions about short term priorities are given below;

- * Adopt a revised programme for transposition and implementation of the acquis. Develop a plan for financing investment.

- * Continue to transpose and implement the acquis related to the framework legislation, international environmental conventions, and legislation on nature protection, water quality, Integrated Pollution Prevention Control and waste management. Implement and enforce the amended environmental impact assessment directive.

- * Pursue the integration of environmental requirements into other sectoral policies.

- * Develop a plan to strengthen administrative capacity, implementation and enforcement of environmental legislation.

- * Pursue the development of trans-boundary water cooperation, in line with the water framework directive and international conventions to which the EC is a party.

Determinations and suggestions about medium-term priorities are given below;

- * Continue alignment with the acquis and strengthen the institutional, administrative and monitoring capacity to ensure environmental protection, including data collection.

- * Integrate sustainable development principles into the definition and implementation of sectoral policies.

- * Ensure full transposition and progressive implementation and enforcement of the strategic environmental assessment directive, as amended.

- * Adopt and implement a national waste management plan.

When all of these suggestions and conditions are taken into consideration together, it can be said that there is still a long way in front of Turkey.

⁴⁴For the suggestion of Council decision see; SEC (2005) 1426, Brussels 9 November 2005 COM (2005) 559, for the official text see; Accession Partnership with Turkey 23.1.2006, Council Decision OJ L22 26.1.2006, p.34. For the short and medium term priorities see the same document p.44, 49.



Turkish Environmental Policy According to 2005 Progress Report

2005 Turkey's Progress Report of European Commission⁴⁵ examines the abilities of Turkey whether she can perform the membership requirements which are written in the Union's Agreements, secondary regulations, and Union's policies or not.

The subjects mentioned within the Negotiating Framework Document are also focused on the Progress Report. That is, in order to be able to apply the *acquis* of the Union effectively (it is not enough only to transmit the regulations), Turkey should improve her institutions, administrative capacity, administrative and judicial systems up to the Union's standards before the acquisition of the membership. The Commission pointed out the following conclusions in the previous (2004) Progress Report:⁴⁶

*"The integration of Turkey was successfully observed in many areas, but for certain topics –including environment- Turkey is staying behind in progress. There should be a harder work in all of the areas, and new regulations mustn't be out of the *acquis*..."*

In 2005 Progress Report the topic of environment takes its place under the chapter of 27. The first sentence begins with purpose of the Union's policy which claims to promote sustainable development and protect the environment for present and future generations. Later, the principles, on which this policy is based, are defined. These principles are **"preventive action, the polluter pays principle, fighting environmental damage at source, shared responsibility and the integration of environmental protection into other EU policies."** It is stated that the *acquis* comprises over 200 major legal acts covering horizontal legislation, water and air quality, waste management, nature protection, industrial pollution control and risk management, chemicals and genetically modified organisms (GMOs), noise and forestry. According to the report; compliance with the *acquis* requires significant investment. A strong and well-equipped administration at national and local level is imperative for the application and enforcement of the environment *acquis*. Since last year's Regular Report, **some progress** has been made in the field of waste management, in the noise sector and nature protection. **Limited** or no substantial progress has been made with regard to transposition of the *acquis* in the other environment sectors.

Continuously the report claims that in the field of **horizontal legislation**, no substantial progress can be reported. Turkey has not yet ratified the Kyoto Protocol and has not yet become a party to the Espoo and Aarhus Conventions. Further efforts are also needed as regards the establishment of a greenhouse gas emission allowance trade scheme as well as the adoption of legislation on Emission Trading. Whereas the current legislation on Environmental Impact Assessment (EIA) appears to be aligned to the *acquis* on most counts, trans-boundary requirements remain to be transposed and correct handling of public consultations still require further attention. In addition, transposition of the Strategic Environmental Assessment Directive (SEA-Directive) is at a very early stage and needs particular attention. Overall, transposition and implementation of horizontal legislation is still a matter of concern and further significant efforts are needed in this regard.

⁴⁵http://www.abgs.gov.tr/uploads/files/2005_ilerleme.pdf 12.02.2006

⁴⁶COM (2004) 656 final, for the non-official translation of the Report see *ibid.* p. 138.



About the air quality, it is informed in the Report that; limited progress can be reported. Regulations on industrial air pollution control and on control of air pollution from domestic heating were adopted. The transposition of the air quality framework legislation is however **not yet very advanced**. Transposition of legislation on the pollution from vehicles is **rather advanced**. The Consumer information Directive was **fully transposed** and the Quality of Petrol and Diesel Fuels Directive is almost fully transposed. The Report notifies that the Ministry of Environment and Forest and the Ministry of Health have the responsibility of monitoring air quality parameters. There is a certain overlapping of monitoring tasks between these two institutions. Overall, transposition and implementation of air quality need further significant efforts. **Some progress** can be reported concerning transposition concerning waste management with the adoption of an amendment of a regulation on waste batteries and accumulators, a regulation on the control of medical waste, an amendment of an implementing regulation on solid waste as well as of implementing regulations on control of vegetable waste oil and hazardous waste. With regard to sewage sludge the amendment of the implementing regulation on soil pollution control entered into force in May 2005. According to the Report; legislation in the field of waste management is **advanced** with regard to the transposition of several Directives, including the Framework Directive. **Progress remains poor** for the polychlorinated biphenyls and End-of-life vehicles Directives. Legislation for Waste Electrical and Electronic Equipment (WEEE) is under preparation. **No developments can be reported** for the Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive. Further efforts are still necessary to complete transposition of the Landfill and Waste Incineration Directives. The capacity of the Ministry of Environment and Forest with regard to licensing, monitoring, inspection and enforcement needs to be strengthened. Sufficient financial resources need to be allocated to the sector. Overall, implementation needs further efforts and a national waste management plan needs to be adopted.

The Report says that a **limited** development can be reported concerning **water quality**. According to the Report⁴⁷ implementing Regulations concerning water for human consumption was adopted and codes of good agricultural practices. Although some aspects of the water quality acquis are already covered by the Turkish legislation, transposition **remains low** except for the Nitrates and Drinking Water Directives. **No development** in transposition of the Water Framework Directive can be reported and significant efforts are required in this regard in order to achieve full compliance by accession. The development of trans-boundary water cooperation, in line with the Water Framework Directive and international conventions to which the Community is a party is at a very early stage. The institutional framework for water management is complex and weak. It does not provide sufficient guarantees for implementation and enforcement and is not organized yet on a river basin based management. Overall, transposition and implementation are a matter of concern. Significant efforts are needed in order to achieve full compliance and implementation by accession.

⁴⁷ Ibid. p.139.



This Progress Report emphasizes that **some progress** can be reported in the area of nature protection. A number of regulations on the establishment of the wildlife conservation and wildlife enhancement areas, as well as a communiqué on permissions and limits controlling the international trade of the bulbous wild plants and regulations on hunting were adopted. In addition, a national park in Eastern Anatolia and three internationally important wetlands (RAMSAR sites) were established. Despite the adoption of some legislation and declaration of protected areas for the purpose of nature protection, the Union believes that the level of legal harmonization and implementation remains very low. Institutional framework is complex, divided among several authorities and division of responsibilities among the relevant institutions needs particular attention. Overall, transposition, implementation and enforcement need to be improved significantly.

According to the Report⁴⁸ the areas which don't measure any progress are industrial pollution control and risk management. Transposition and implementation remain very low with only **very limited progress** in transposition of some of the Seveso Directive's requirements. Overall, full alignment and implementation require significant efforts.

The Report notifies that **no new development** can be reported as regards chemicals. The level of harmonization remains **very low** with the exception of the Animal Experiments Directive. Current capacity for effective implementation is insufficient and needs to be improved. No progress can be reported on genetically modified organisms.

The Report says that a **significant progress** can be reported only about noise. An implementing Regulation concerning the assessment and management of environmental noise was adopted. Overall, the level of harmonization is **advanced**; however, implementation requires further efforts and noise maps and action plans need to be prepared.

It is stressed that **limited progress** can be reported in the area of forestry. A communiqué related to the implementation of the national plan to combat desertification was issued by the Ministry of Environment and Forest and a national forestry strategy was developed. Turkey has a well developed structure related to forestry issues. However, implementation requires significant further efforts.

At the end, the Commission finds out these conclusions and presents the following suggestions to Turkish authorities:

⁴⁸Ibid. p.140.



Some progress can be reported only in the field of waste management, nature protection and noise. The overall level of transposition of the environmental **acquis remains low**, although the transposition is advanced in the field of waste management and noise. Weaknesses in the implementation and enforcement of environmental acquis are still source of a major concern. Trans-boundary issues under the environmental acquis and international conventions, to which the Community is a party, require particular attention. Turkey needs to take steps to integrate environmental protection requirements into the definition and implementation of all other policies, and to promote sustainable development. Particular attention is also needed as regards strengthening administrative capacity and coordination mechanisms between the authorities involved in the implementation of environment policy. Considerable investments need to be secured to ensure implementation of the environment acquis. In this context, it needs to be stressed that **all new investment projects** should comply with the EU environment acquis.

Evaluations of Environmental Sector on the Scope of EU Screening Process⁴⁹

“Introductory Screening Meeting”, as the first chapter of screening process of Environment, was done in Brussels at 3-11 April 2006. In this meeting, about 111 ministers were informed by the European Commission on EU Acquis about the Horizontal sector, Air Quality sector, Water Quality sector, Nature Preserving sector, sector of Industrial Pollution and Risk Management, and Chemicals sector.⁵⁰ Different from the last period’s negotiating process, alongside with EU Environmental Acquis, the Forestry sector was also handled under the chapter of “Environment” within the negotiations for Croatia and Turkey.

During and at the end of the Introductory Screening Meeting, the authorities of European Commission attracted attention to the certain issues:

- In the adoption of EU Acquis into Turkish Acquis main Environmental Directives, such as Directive of Water Framework and Directive of Waste Framework, should be handled before all else. And, an integral approach should be implemented in the adoption of other related directives. That is, other directives should be in the harmony with Environmental Directives. Especially, necessity of the Directive of Water Framework should be taken into consideration at the time of adoption of acquis of water quality.
- In the adoption of EU acquis, participation of people, which is mentioned in the regulations, should be realized.
- Strategies should be set up for each sector. And financial applications from European Commission should be done according to these strategies.
- A coordination ought to be implemented between related public organizations in the central, regional, and local levels.

At 29 May-2 June 2006, under the control of European Commission, a second part of Detailed Screening Meeting was done in Brussels. In this meeting, 60 presentations were put forward by Turkey.

⁴⁹ A special interview with Sedat Kadioğlu, Chair of the Department of Foreign Relations and European Union, about “Evaluations of Environmental Sector on the Scope of EU Screening Process”, Ankara, 20.09.2006.

⁵⁰ See: http://www.abgs.gov.tr/tarama/tarama_files/27/27TT_Annotated.htm



During and at the end of the Detailed Screening Meeting, the authorities of European Commission attracted attention to the certain issues:

- Turkey should adapt and apply EU Environmental Acquis, especially its trans-boundary necessities and water legislation issues should be taken into consideration;
- Administrative capacity should be strengthened;
- An investment strategy should be set up about the chapter on environment;
- Agenda for the adoption of acquis should be prepared;
- Adoption and application of EU Legislation on Customs Union should be handled firstly.

A report of Screening will be prepared according to the answers given to the questions, and according to the presentations of Turkey in the Detailed Screening Meeting. And this report will be submitted to Turkey at spring 2006.

Problematic points of Turkey according to European commission:

- The requirement of Turkey's adoption and application of EU Environmental Acquis, (especially its trans-boundary necessities and water legislation issues)
- The requirement of strengthening the administrative capacity. And the requirement of changing complex and institutional capacity into EU Environmental Acquis.
- Turkey should set up an investment strategy for the chapter on environment (In Detailed Screening Meeting, Turkey stated that she needs 60 billion Euro for the investment but the Commission states the investment expenses of Turkey as 70 billion Euro. The Commission asked and explanation from Turkey at the end of Detailed Screening Meeting,)

Expectations of the Commission from Turkey:

- Turkey's Strategy of EU Environmental Adoption should be firstly approved by Higher Planning Institution
- Turkey should prepare Environmental Investment Strategy which will help to incite financial resources
- Not only legislation must be adopted, but at the same time applications and obligations should also be implemented
- Environmental care should be integrated, especially, with the sectors of energy and water. Environmental anxiety should be taken into consideration, above all, in the construction of dams which was set up to meet the increasing energy need of Turkey.

Critical Topics

-For the investment projects of Turkey, EU will supply 400 billion Euro of financial support for the period of 2007-2009. And in 2006 500 million Euros will be spent for ten different investment projects. The framework of financial support from EU pre- Accession Financial Cooperation Program will be changed dating from 2007. After the approval of IPA (Instrument for Pre-accession) Regulation, Operational Program should be prepared and presented by Turkey to the Commission. Operational Program will draw the framework of financial support for the environmental projects of Turkey. Among the projects of Operational Program, financial support will be taken from EU for the urgent investment projects. The urgent issues are the sectors of waste disposal and water services.



-According to the report of screening process prepared by European Commission, benchmarks of opening and closing related with negotiations will be determined in spring 2006.

-It is previously necessary to adapt EU legal regulations about the Customs Union, and application of them as soon as possible.

-International agreements such as Espoo and Aarhus which were signed by EU are considered as a part of EU legal regulations. Commission expects that Turkey will approve these agreements immediately. However, both the approval of these agreements and Kyoto Protocol will bring out new troubles in the application of EU regulations.

Horizontal Legislation

Directive for Environmental Impact Assessment (EIA)

Issues which were founded incomplete by the Commission:

-It is found that people's participation in Turkey is not satisfactory after the process of EIA.

-Turkey's Inadaptability of 7th article of directive for EIA (This article foresees consultation only among the EU member countries).

Water Quality

It is hoped to adapt Framework of Water Directive which would bring certain new difficulties to Turkey. These are: administrative regulations (Article 3), measures program (Article 11), international cooperation (Article 12), and plan of river and river basin management (Article 13).

Air Quality

Limit values of basic pollutants in Turkey are 10 times higher than those of EU values. Commission specifically paid attention to this fact in the meeting of Detailed Screening. It is stated that more efforts should be spent for adoption and application of legislation of air quality. On the other hand, although the Commission recognized that Turkey has no intention to sign the Kyoto Protocol, the Commission expects that Turkey must determine certain targets for the emission values in 2012.

Waste Management

It is found that **Turkey** has recorded a significant progress in waste management affairs especially in terms of adoption of related EU acquis. According to Negotiating Framework; it is among Turkey's middle term objectives "to approve and apply National waste management plan". For this reason, the Commission also states that a national waste management plan should be prepared.

Nature Conservation

The Commission foresees that Turkey's institutional structure in nature conservation is not very clear. Much remains to be done with regard to legal harmonization. A framework law on nature protection and implementing legislation transposing the provisions of the birds and habitats acquis need to be adopted. Turkey declared that she is working to prepare a proposal which includes these issues and biodiversity.



Industrial Pollution and Risk Management

A high level investment is needed especially for the implementation of Directive of Great Burning Establishments (Büyük Yakma Tesisleri Direktifi). It is expressed to the Commission that efforts for the adoption of IPPC Directive are still going on. In addition to this, the proposal for the adoption of Seveso Directive is being evaluated. The Commission noticed that IPPC Directive is a important implementation.

Noise

As regards noise, a full progress has been made with the adoption of a regulation on the assessment and management of ambient noise. The Commission was informed that, the activities for the application will be supported by Financial Cooperation of Pre-Accession in 2004.

General Evaluation of Environmental Sector in Terms of EU Screening Process

“Environment” is among the most difficult areas and most detailed topics in adoption of EU acquis within the process of the negotiations of new member states. For the candidate states environment is one of the most difficult areas to make necessary adoptions since the environmental acquis is a very detailed one which requires of investments that need dreadful amounts of financial expenses for both candidate and member states. When EU statistical data is studied, it is found out that investment expense of 10 new member states of EU for the adoption of EU environmental acquis is expected as 120 billion Euros. This amount is about 1-3 % of those countries GNP (www.ikv.org.tr, 2006). For Turkey, this figure is guessed as 60-70 billion Euros. Therefore, the candidate countries mostly ask for greatest time of period for the adoption of this acquis and legislation. For Turkey, from 2014 onwards the following periods of time is expected for the adoption: 14 years for the directive of toxic and dangerous wastes, 10 years for the directive of urban waste water, 10 years for the directive of drinking water, 9 years for the directive of regular storing, 7 years for the directive of control of industrial pollution, 6 years for the directive of package wastes, 5-15 years for the directive of great burning establishments.

Strategy of National Environmental Activity, prepared by Turkey, was sent to Brussels at 14.09.2006. This Strategy of national Environmental Activity foresees an investment of 61 billion Euro within 17 years for the adoption of environmental acquis of EU that 30-35 billion Euro of this investment should be spared for waste water and drinkable water, and 18 billion Euro for the industrial sector, which pollutes the environment, for the adoption of EU norms in their own plants (www.milliyet.com, 2006). That is, in Turkey for the financial cost of adoption of EU environmental acquis, greatest amount of these expenses will be supplied by public sector and the rest of expenses will be supplied from the private sector. For this reason, public sector in Turkey must develop certain financial measures. Or, like 10 new member states of EU, Turkish people will pay the expenses of environmental acquis by their own taxes (www.milliyet.com, 2006).



Conclusion

It is known that international environmental regime is effective and in environmental protection. As one of the most essential actors of international environmental regime, EU has been exported environmental regulations to other countries in the international level, and it has been influential and prominent in the application of those regimes. EU's environmental regulations and *acquis* are influential on both member and candidate countries, and many other countries. For this reason, as a candidate country, Turkey will be influenced by those policies, as well. Recently, EU directs and controls the environmental policy of Turkey by means of five documents. These are; Negotiating Framework for Turkey, 2005 Enlargement Strategy, 2005 Accession Partnership, Progress Report of Commission on Turkey, and other related documents with regards to Screening Process.

Nowadays, Turkish environmental policy is being shaped under the guardianship and control of EU environmental policy. This environmental policy of Turkey should be determined by a "consensus" which meets and harmonizes the requirements of both Turkish national interests and EU common benefits. In this issue, central and local government institutions, private sector, and voluntary organizations have common duties and responsibilities (TUSİAD, 2002: 25).

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AN EVALUATION OF CIVIL ACTION ON ENVIRONMENT IN THE LIGHT OF INTERNATIONAL DOCUMENTS: CASES FROM TURKEY AND EUROPE

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The environmental issues started to be discussed in the international arena more than two decades ago. 1972 Stockholm Conference and Declaration are considered to be the starting point of the international environmental agenda (Elliot, 1998). The contents and the focus of the discussion were transformed considerably ever since. We can call this process of transformation as an evolution which followed the relevant issues of development and its international aspects. In that manner, the international/ supranational organizations such as UN became the key actors of this evolution. The international conferences and summits they hosted since 1972 set the stage for the nations and groups to argue on the issues. These international meetings determined the global agenda in terms of the environmental issues. Therefore, by looking at the topics of these conferences and to the contents of the documents that were published at the end of each conference or summit, we can track down the transformation.

At a glance, it is quite obvious that the focus, content and the terminology, as well as the suggestions for solutions in the international documents have changed significantly since 1972 Stockholm Declaration. The discourse and the major concerns with regard to the global environmental issues shifted from mere warnings to the each nation to a focus of maintaining sustainability via participation of civil society. In that manner, the evolution of the discourse followed two different paths, which lead to a bidirectional/two-dimensional discussion. On the one hand, the environmental issues are now handled in a rather global fashion. On the other hand, the importance of local civil society and local participation is emphasized more and more.

The aim of this paper is to examine the enhancement of the civil society with reference to the actual practice. The local civil organizations in Turkey and in Europe will be compared in order to understand to what extent the new principles of environmental protection are implemented in these regions of the world. The projects and other activities of the civil organizations will be taken as cases to discuss the central question of the paper. The relevance of these activities and the actions taken, if any, will be questioned. The conclusions which will be presented in this paper are expected to show the strengths and weaknesses of the civil action in Turkey and in Europe. This way, some suggestions can be made for future activities.



Introduction:

Human beings have always been interaction with the nature and their surroundings. We call these surroundings “environment” in general. However, the contemporary meaning of the term “environment” has developed recently. Since the industrial revolution, the modern nations develop continuously in terms of industry and technology. The pace and contents of this development effected these societies in various ways. These effects become obvious in many fields from the organization of society to the utilization of natural resources, and from education to health. And everyday they give rise to new discussions. In that manner, environment is an issue that occurred together with the mankind’s “progress” in technology and production. In relation to that, “environmentalism” and “environmental problems” are issues that can be considered as an outcome of the critique of capitalism (Tekeli,2000:10).

Today, the term “environment” is related to many other fields ranging from economics to human rights. The issue of environment is a considerable social subject matter now. This is because of the fact that all human activities have impacts on environment, either positive or negative. As the human activities increase in variety and gets more and more complex, the environmental issues gets bigger and extends towards new dimensions. The aim of this study is to reveal the extent of the social complexity of the environmental issue and to examine the “environmentalist” civil movements in this context.

Environment as a Global Phenomenon

Environmental issues can be considered global in two different ways. First of all, the physical limits of the environmental issues cannot be drawn. This is also the very fact that distinguishes technological developments, industrialization and innovations in production from the environmental issues. A country can determine its territory in terms of raw material, production and market; however it cannot limit the effects of the process on environment and society. Moreover, in most cases these effects are unpredictable. According to Kışlalıoğlu and Berkes (1989), some environmental problems are beyond borders. USA and England send a lot of acid rains to Canada and Scandinavia, respectively (p.23). This is a very important point to be considered carefully within the studies on environment and the interaction must be taken into account objectively. As Ulrich Back (1998), who discusses the concept of “risk society” with a considerable emphasis on environment, argues that even tough years passed after the Chernobyl disaster, most of the injured are not even born yet.

Second aspect of the environmental issues which make them global is the action aspect. Given the extent and the severity of the issues, any action to be taken must be based an international/global agenda. However, global approach is a relatively recent development in terms of environmental protection. The environmental issues started to be discussed in the international arena more than three decades ago. 1972 Stockholm Conference and Declaration are considered to be the initiation of the international environmental action (Elliot, 1998). The contents and the focus of the discussion were developed and transformed considerably ever since. We can call this process of transformation as an evolution which was to some extent effected by the contemporary issues of economic development and its international aspects. It must be noted that the international/ supranational organizations such as UN became the key actors of this evolution.



The international conferences and summits initiated by UN since 1972 set the stage for the nations and groups to argue on the issues. These international meetings determined (at least aimed to determine) the global agenda in terms of the environmental action. Therefore, by looking at the topics of these conferences and to the contents of the documents that were published at the end of each conference or summit, we can track down the transformation. Plus, the examination of such documents provides the information about global concerns in terms of environmental issues.

International Conferences and Documents on Environmental Issues

As mentioned before, 1972 Stockholm Declaration on Human Environment is considered the first attempt to attract the attention of the international community to the environmental issues. Therefore, the contents and the approach included in this internationally recognized document is worth consideration in order to be able to observe the transformation (if any) ever since.

First of all, this document relates the environmental issues with the technology to a great extent. In that manner, it suggests that the problems regarding the environment can be resumed by more technology. This viewpoint is quite obvious in the Article 4 of the Declaration. This Article implies that the environmental problems in developing countries are results of their being “underdeveloped”. Moreover, when we read through the Declaration, it is understood that the capacity of the mankind to transform nature by technological progress and science is the major emphasis of this documents. Therefore, the primary cause of the damage done to the planet is “ignorance” and “indifference”. Another point which is implied throughout the 1972 Stockholm Declaration is the idea regarding the superiority of mankind in nature. In other words, human beings are considered as the most valuable and they have the right to transform nature and their environment.

When we look at the principles of environmental protection that were considered as common inspiration by all the signing countries, we can talk about two major titles. One of them is “safeguarding” and the second one is “saving the non-renewable resources”. This is because of the fact that the Declaration approaches the environmental problems as problems of “misuse of resources” and “pollution”. The major concern is to protect resources from exhaustion and pollution. Especially the development and use of renewable resources are emphasized.

1972 Stockholm Declaration offers planning as the tool for the solution and prevention of environmental problems. This also verify the point that we made before which indicates that the Declaration perceives under-development as the primary cause of environmental problems. In that manner, the document suggests that the developing countries can overcome the gap in technological progress between their countries and the developed countries. This way, the environmental problems and damage caused by under-development can be minimized, plus a nature- friendly utilization of resource use can be adopted. In addition, in this context, it is stated that the developed countries should support developing countries in this process. The support includes both financial aid and technology.



The second international document that will be examined within the aims of this study is 1992 Rio Declaration on Environment and Development. This document is considered important because it shows the transformation in approach to environmental problems after 1972. Plus, it includes some concepts such as “sustainability” and “sustainable development” which are still relevant and significant. In 1992 Rio Declaration, as indicated by its title, the relationship between development and environmental problems is emphasized. In that manner, the major argument of the Declaration is that the human beings’ right to engage in activities towards development should be fulfilled with a considering approach for the development needs of the future generations.

One of the most remarkable points made by the document is about the global approach. It is stated in the document that the development needs of the developing countries and their vulnerabilities with regard to the environmental issues must be handled in the global scale. On the other hand, the document also includes the national measures to be taken in relation to environmental problems. In other words, the national tasks and global cooperation are organized by this declaration. For example, the promotion for implementation of appropriate population policies in order to provide sustainability in production and consumption is considered a national task as well as constructing awareness by providing the society with the access to information about environment.

The viewpoint of the declaration which combines national and global approaches to environmental problems is manifested in the Principle 11 of the document. It implies that the states of individual nations should resort to legislation to enforce environmental measures. However, the standards they apply may have inappropriate or unwarranted social consequences for some developing countries. These must be considered in the process.

The most important aspect of the 1992 Rio Declaration is its contents towards minimizing the environmental impacts of international economic relations and process. For example, the documents emphasizes the issues such as the transfer of materials and production activities which have damaging effects on environment abroad and it suggests that this kind of issues must be solved by international cooperation.

When we compare these two international documents, namely 1972 Stockholm Declaration on Human Environment and 1992 Rio Declaration on Environment and Development, we see that the general approach to the environmental issues has changed considerably. First of all, the change can be understood from the titles of the documents. In Stockholm, the title indicated that the only concern was environment or the nature. However, 20 years later in Rio, the concept of “development” took its place in the title as one of the major aspects of the issue. This means that the environmental issues started to be discussed in a multidimensional manner.

In the 1972 Stockholm Declaration, development was o concern only within the planning purposes. As a matter of fact, the control of the use of resources was the only objective. On the other hand, the level of development was perceived in a causal relationship with the environmental problems. Therefore, the only remedy for the problems is also considered to be development; however, the meaning attributed to the term “development” indicated modernization.



The concept of development as well as the other key concept “sustainability” has given whole new meanings in 1992 Rio Declaration. First of all, the new meaning attributed to the concept of development includes social advancement as well as economic improvement. In this context, it is argued that public awareness should be raised by providing access to information. The major aim of this approach is to facilitate participation by local community and groups in order to be able to solve the problems in a sustainable mode. To conclude, we can suggest that Rio Declaration takes both global and local aspects of the environmental issues which indicate a major transformation compared to the Stockholm Declaration.

The Implementation of International Environmental Principles: Cases from Turkey and Europe

The international agenda with regard to the environmental issues are determined by the conferences and declarations which are realized with the contribution of many nations which are members of the international/supranational organizations such as various agencies of United Nations. For this reason, the environmental problems are discussed on a rather non-governmental basis, aside from the legal and governmental aspects of the issue. In other words, international civil society plays a key role in the formation of international standards and action plans for environmental protection as well as the principles. However, as mentioned before and as emphasized by 1992 Rio Declaration, local participation is considered essential to the implementation. Again, as implied in the same document, the local and international civil societies have the responsibility of facilitating this participation.

As mentioned before, the aim of this study is to examine the local civil organizations in the context explained above. The local cases from Turkey and Europe will be described in order to be able to determine the level of impact the internationally accepted principles and standards made on the local environmentalist activities. The necessary information about the activities of the cases will be provided by the content analysis of the official websites of the cases.

The Turkish Case: Environment Foundation of Turkey

Environment Foundation of Turkey (EFT) was established in 1978 as one of the first civil environmentalist organizations in Turkey. The foundation defines itself as a non-governmental, non-profit voluntary organization. EFT started to work in partnership with international organizations and foreign partners in 1983. The major activities of the organization are research, publications and other activities aimed to raise public awareness.

The foundation is significant for being the first organized movement to introduce the major environmentalist issues and concepts to the Turkish public as well as the national politics. More importantly, EFT started as a merely national initiative without any international contribution. On the other hand, in the time period that the foundation started its activities, the major concern was economic development. At that time, a few years after the 1972 Stockholm Declaration, it was an important step forward. In this context, the successful efforts of the foundation to introduce environmental issues into the Constitution and legal system can be considered as one of the greatest contributions of the organization.



When we examine the activities of the foundation, we see that after the contribution provided to the constitution, it started to work on publications. These publications also had an important impact because they introduced significant concepts like “sustainability” and “biological diversity” to the public as well as to the Turkish literature on environment. However, the recent publications and the other activities such as seminars and panel discussions that were organized are focused rather on technical issues about environment and biology. Therefore, the foundation has started to become an organization of the specialists. Some of the titles of the recent publications are; “Kyoto Protocol and Turkey”, “Bio-security Control and Incentives in Biodiversity Agreement” and “The Biological Riches of Turkey”.⁵¹ These are obviously important materials on important environmental issues, but they are not that useful for communicating with the public.

When we make an overall assessment of the activities of EFT, we see that the concept of sustainability is emphasized by the organization. However, that does not mean that the principles outlined in 1992 Rio Declaration are implemented in a complete manner. The activities are rather focused on the introduction and promotion of the concept itself. Therefore, the participation aspect is not fulfilled entirely. The seminars and panel discussions that were organized by the foundation were rather scientific and did not contribute to the public consciousness. On the other hand, the activities of the foundation as a pressure group on legislation must be considered as a success in the Turkish context.

The European Case: Swedish Society for Nature Conservation

The Swedish Society for Nature Conservation (SSNC) was established in 1909 and today it is the biggest environmental organization in Sweden. The activities of the foundation are various and include many areas such as urban environmental issues, environment-friendly sports and global warming.

The organizational structure of the society is very significant because the organization has 274 local branches. These branches work locally as well as in cooperation with each other for some national campaigns etc. Moreover, the participation is very much emphasized by the organization. They focus on “government by members”. The administrative structure of SSNC is explained by the society as composed of delegates, governing board and a national office. Delegates at the SSNC Assembly outline the guidelines for the work of the national organization and elect a governing board. A national office coordinates activities and provides services for the members.⁵²

The agricultural issues constitute an important ratio of the activities of SSNC. For example they public reports about sustainable agriculture and hazardous pesticide. SSNC worked as a pressure group in 1970s and promoted legislation banning mercury, DDT and PCBs. These reports that are published by the society are loaded with technical information and they usually refer to international documents such as declarations of United Nations on particular issues. However, they provide more simple explanations for the general public.

⁵¹ See www.cevre.org

⁵² See www.snf.se/english.cfm



As comprehended from the contents of the website of the society, the campaigns are the major activities of the organization. For example, they are running a campaign about conservation of forests and promoting legal measures.

If we look at the activities of SSNC from a general perspective, we see that the society is well- organized in terms of administration and tasks. In that manner, they fulfill the participation principles of 1992 Rio Declaration. Sustainability on the other hand, is handled in a rather technical approach. Therefore, some activities can be considered as popular activities and some can be regarded as technical and legal debates and issues. On the other hand, the organization of the activities reveals that SSNC is in cooperation with international environmental institutions and NGOs.

Concluding Remarks on Turkish and Swedish Cases from the Perspective of International Environmental Action

This paper includes two different comparisons in terms of the environmental issues and protection of the environment. One of them is the comparison across time. In that manner, we discussed the transformation between 1972 and 1992 through the examination of two international documents. The second comparison involves the two cases from the world. Namely, from Turkey and from Sweden. In this conclusion part, the two comparisons will be blended to see the general picture.

The general overview of the two civil organizations shows that concerns regarding environmental concerns slightly differ between countries. In other words, the priorities and the types of action may not be the same in each case, even though the major issues are the same. Looking at the examples from Turkey and Sweden, we can say that the local/national is blended with global when it comes to the environmental issues. Both in Turkey and in Sweden the concepts and issues emphasized in relation to the environmental protection are almost the same. For example, “sustainability” is a common concern across these countries. However, what make each case particular are the approach and the action types that are utilized. In that manner, we can conclude that the international documents and especially the declarations of international conferences are effective in determining the framework of the environmental issue. More specifically, these documents tell us which environmental problem should be our priority and what should be the framework of our approach. Given the fact that, the contents of these declarations are shaped around these aims, we can suggest that they accomplished their mission. In other words, the international documents are successful in terms of macro level approaches to the environmental issues. On the other hand, the effectiveness of the separate activities on attaining the ultimate goal, that is to solve the environmental problems, should be studied further for the better evaluation of the civil action for environment. Within the limits of this paper, we cannot discuss the success of the micro level activities.



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INTERNATIONAL CONFLICT MANAGEMENT STRATEGIES IN WATER STRESSED REGIONS: A CASE STUDY OF BALOCHISTAN POST SEP 9/11

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The present configurations of conflicts in international system have linkages with pre and post September 9/11 attacks; referred to international conflict management strategies. The two propositions of conflict hoisted in Afghanistan one by Russian invasion in 1979 and the other after US led coalition attack on Afghanistan in 2001 has vividly envisaged conflict trends in Balochistan vis-à-vis its geo-strategic and natural capital.

Natural resources have been always neglected in conflict impact assessment and this paper intends to highlight this trend with reference to Balochistan. In both ways as they are affected because of conflict and it may cause conflict. So the hypothesis set for this paper is, "If the natural resources are well taken care of; than the probability of conflict may be reduced in future, while keeping in view the trends of emerging conflicts."

The significance of this study stems from corroborated features of conflict relevant to Balochistan: one is the climate change. In 20th century 06 Celsius temperature has been increased of earth planet which may accumulate according to the predictions of climate change scientists; two is persistent conflict in Afghanistan invading demographic trends in Balochistan with two pronged effect on human and natural resources. The water resource has emerged as an element of conflict because of persistent drought in Balochistan.

The paper is divided into five sections; following the introduction, section two will discuss the water stress in Balochistan, section three will elaborate the recurrent conflict in Afghanistan, section four will go into international conflict management strategies, and section five will be the conclusion.

Conflict could include all explicitly and implicitly competitive/coercive relationships involving human beings interacting as individuals and as groups, regardless of whether the type of "violence" employed is physical or psychological, or military or economic, actual or threatened and /or implied (Coulombis, Wolfe, 1994).

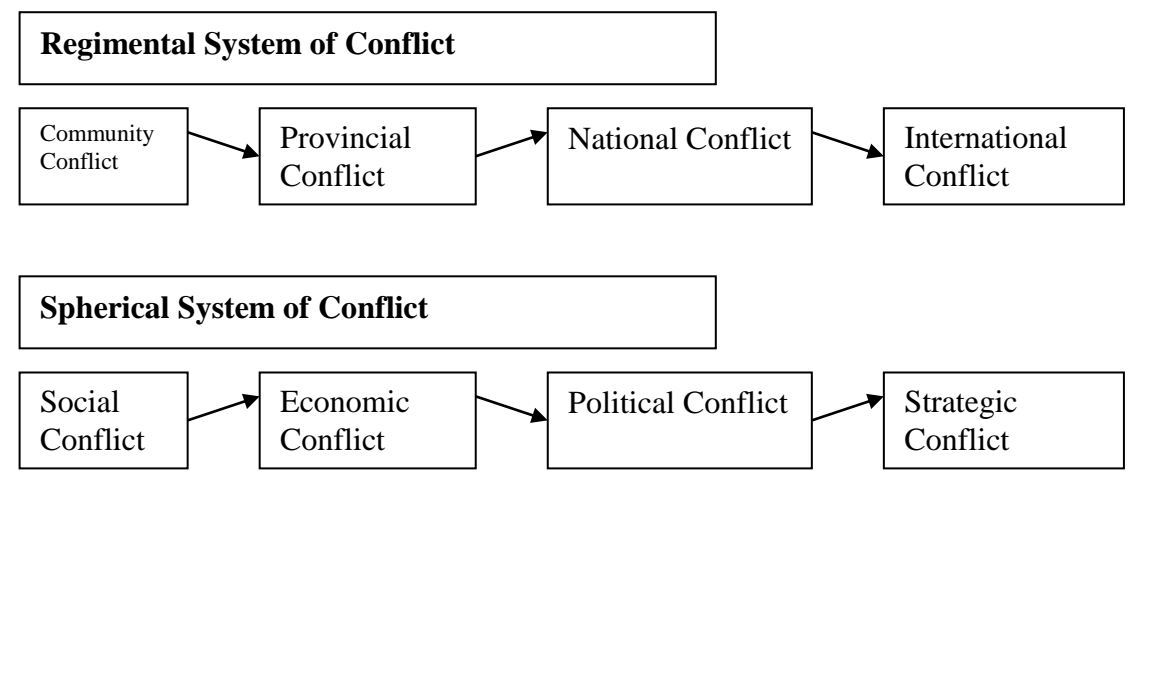
The paper values systems thinking theory and factors analysis approach; while seeking implications of international conflict management strategies on Balochistan. Systems theory of international politics explores the structure of the system, and variations in it, affecting the interacting units and the outcomes they produce. International system emerges from the interaction of states: constraints them from taking certain actions while propelling them toward others (Waltz, 1991). International system is comprised of many subsystems; the behavior of system with respect to its internal or external affairs may be accounted as internalities and externalities. Here the externalities are taken into following connotations:



1. The human activities, such as burning of fossil fuels, conversion of forests to agriculture land at unprecedented rates are causing significant increases in the level of carbon dioxide (CO₂) and other “Greenhouse gases” (Houghton, 1990). *The factors causing global warming are external to internal system of nature.*
2. The international conflict management strategies envisaged by international and extra regional actors seem external to internal geopolitical system of Balochistan.

The prevailing due to water stress situation may permeate conflict with in the province. The conflict is likely to emerge through two systems (See Table.1).

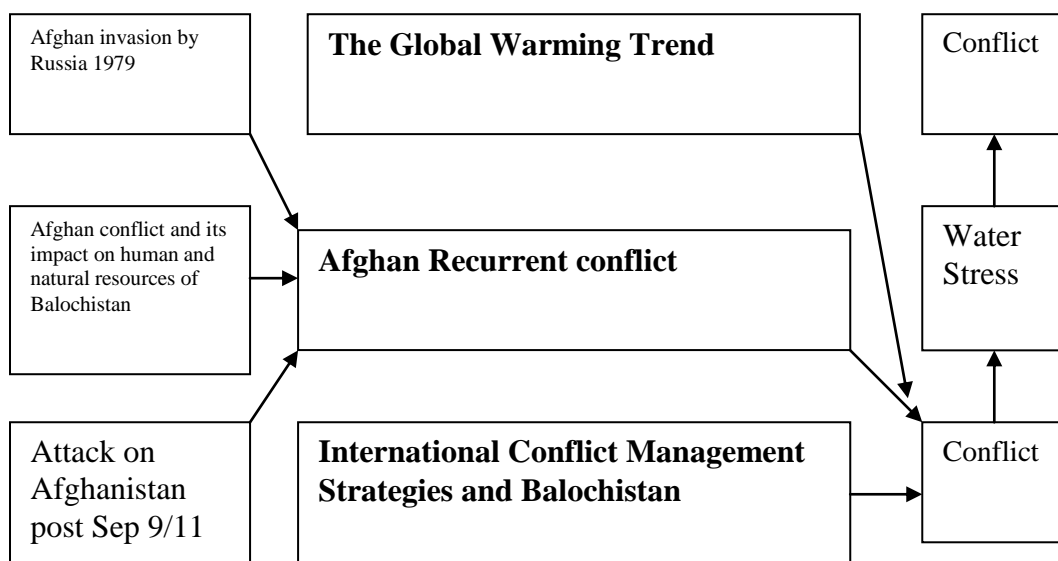
Table. 1 Systems of Conflict vis-à-vis Balochistan



The analytical perspective chosen for this paper is international conflict management strategies emphasizing the political economy in water stressed region of Balochistan (a unit in international system). The question here posed is; whether unit level cause may permeate a system level effect? The paper explores the linkage between conflict management strategies and water stress (See Table. 2).



Table. 2 Specific Argument in this paper:



System-wide view of Balochistan

To have system wide view of Balochistan an index has been developed; elaborated in Table. 3.

Table: 3. Index for System Wide Valuation of Balochistan

Indicators	Factors
The size of the unit involved	Geo-strategic potential
The volume of interest of the unit involved	Depiction of internal capacity in external affairs.
The growth of units appearance size in the system	The amount of potential to gravitate the external elements.

Source: Self made



Balochistan is the largest province of Pakistan with a total area of 347,000 sq km. Balochistan has a 770km long coastline. Rainfall in the province is highly variable resulting from elevation differences; the average annual precipitation varies from less than 50mm in the southwest to about 400mm in the northeast. The evaporation rate is high, which ranges from 1645mm to 1665 per annum. Balochistan has a diverse landscape with high mountains, diverse ecosystems (from coastal mangroves to Chaghi desert) and fragile watershed areas. Chaghi desert, Balochistan Juniper forests, Chilghoza Forests (Sulaiman range), Balochistan subtropical forest and Balochistan rivers are among the ten critically threatened ecosystems of Pakistan. Winter receives snow, frost and rainfall ranges between 50 to 155mm and region experiences the hottest summers with temperature occasionally over 51c (WRM, 2003).

Balochistan is sparsely populated province with a share of only 5.8% in total population of Pakistan. It has an estimated 6.5 million inhabitants according to 1998 census. The annual population growth was highest between 1972 and 1981, about 7% due to immigration of Afghan conflict. The literacy rate is 26%. The Balochistan economy is dominated by agriculture (though only 4.6 percent of the total land is cultivated), including livestock and fisheries. It accounts for 52% of the province's GDP and employs 65% of the labour force. The industrial sector contributes 10.43% to the GDP, and together with mining employs 3.4% of the labour force. Minerals are believed to be significant wealth of Balochistan. However this resource has not been fully exploited. It contributes only about 3% to the GDP. The total value of annual production of minerals is Rs. 3.4b out of which Rs. 3.1b come from natural gas alone (UNDP, 2003).

Balochistan is; where the alternative route of the Europe Asian Highway passes from Zahedan in Iran to Taftan in Balochistan on to Quetta. Another alternative road turns south from Kandhar in Afghanistan into Chaman in Balochistan; this is the route freight bond for Afghanistan arriving through Karachi harbour (Asian Times, 2003).

Balochistan topography facilitated Pakistan to become nuclear power in May 1998 by conducting five consecutive bomb blasts in Chaghi. Periodically Afghan resistance groups used their bases in Balochistan to launch attacks against the Soviet backed Afghan government. Balochistan provides a natural strategic base to fight against international terrorism.

There are mineral resources, which are just beginning to be tapped. 30 exploration companies mostly British and American are active in the region. Natural gas pipeline linking Iran with India via Pakistan, and the other linking Caspian Sea gas rich Turkmenistan with Pakistan via Afghanistan: these proposed pipelines, plus the development of Gawadar into deep 27-berth port that would accommodate both large tankers and military vessels (Ibid). Balochistan rich in oil and gas and providing strategic depth to the nation state of Pakistan would remain in focus of regional and international geo-economic and strategic transactions.



II. Water Stress in Balochistan

The most precious natural capital in Balochistan is water. International trend of global warming has increased the water stress in Balochistan; as climate change associated with global warming in it self are not uncertain hypothesis but a virtual certainty. To explore the complexities and establish best estimates of the possible implications of climate change in 1988 governments established the Inter-governmental Panel on Climate Change (IPCC)*1. In December 1995, governments accepted the IPCC full Second Assessment Report (SAR). The likely impact of climate change on a country like Pakistan- is some additional warming and possibility of changes in rainfall and storm paths and intensities is clearly of great concern. Indeed, one of the more consistent projections among climate models is the finding of net soil drying in many already arid regions, and a likely shift in the distribution of global agricultural production, with relative decline in the developing world because of water stress.

Indicators of Water Stress

Undoubtedly the earth planet is getting warmer; many sources are available in this respect at global level. To reflect upon this fact in relation to Balochistan the data has become available only about Quetta city-but the change of climate is synonymous in other parts of the province. To valuate the climate change in Balochistan; people from different communities have been interviewed to shed light on climate change and its effect on their living standard vis-à-vis conflict situations. The people evidenced the rise in temperature because of loss in precipitation and snow (the two sources of water). Balochistan snow and rain regimes are being affected by global warming. A quick look at Table. 4, and Box. 1 would prove the fact.

Table. 4. Temperature Profile of Quetta City of Selected Years in Celsius

	JAN	FEB	MAR	APR	MAY	JUN	
Max	11.6	11.8	17.8	23.8	32.2	33.4	1990
Min	4.6	2.3	4.5	11.3	17.9	20.3	
Max	11.8	13.6	16.3	24.3	30.3	35.2	1995
Min	-0.7	2.0	4.3	10.7	14.9	19.6	
Max	12.4	15.1	20.5	27.9	35.0	36.4	2001
Min	-2.8	0.8	6.0	11.8	18.8	20.8	

	JUL	AUG	SEP	OCT	NOV	DEC	
Max	36.4	35.1	32.5	24.3	22.8	12.1	1990
Min	21.9	25.4	15.3	10.0	5.9	-7.7	
Max	35.5	35.9	31.6	25.8	20.9	10.8	1995
Min	21.5	20.1	13.9	10.0	3.7	1.1	
Max	36.9	35.2	31.7	27.9	21.7	16.9	2001
Min	22.7	19.6	14.6	10.1	4.3	3.5	

Source: MET Data Geophysical Center Quetta, 2002.



For comparison purpose the years of 1990, 1995, and 2001 are selected to evaluate the precipitation trend in Quetta city (See Table. 5).

Box. 1. Observational Evidence about Snow in Quetta Valley

In Quetta valley it has been observed that in sixties and seventies the winter started in late September prolonged up to May, and there was snowfall up to two to three feet, the mountains were covered with snow. Now the winters come in December and remain intact only up to February and snow happens negligibly two to three inches in adjacent areas of Quetta.

Table. 5. Rain Profile of Quetta City of Selected Years

	JAN	FEB	MAR	APR	MAY	JUNE	YEAR
Rain mm	114.1	95.5	44.0	5.0	4.6	0.0	1990
-	30.0	39.2	23.5	34.4	2.1	0.0	1995
-	0.6	23.7	35.2	31.9	0.0	0.0	2001

	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Rain Mm	0.0	0.0	0.0	0.0	0.0	54.1	1990
	103.9	2.0	0.0	13.7	2.5	106.5	1995
	3.6	3.6	0.0	0.0	0.0	27.9	2001

Source: Meteorological Data Geophysical Center Quetta. 2002

Causes of Water Stress

The dominant factor of free market and conflict management economics in policy designs of international

Institutions (intergovernmental international institutions, non governmental

International institutions, and multinational corporations) imposes unhindered exploitation of natural resources, the emissions of greenhouse gases and aerosols due to human activities are affecting the climate causing water stress.

When Balochistan region; is looked upon as part of earth planet system, being faced by climate change inculcating water shortage. The change is attributed to anthropogenic factors external to nature's system. About three-quarters of the anthropogenic emissions of CO₂ to the atmosphere during the past 20 years are due to fossil fuel burning. The rest 25 percent is predominantly due to land use change, especially deforestation.



International Financial Institutions Conditionalities, and Unfair Terms of Trade: Carolyn Somerville in Drought and Aid- A decade of Development Cooperation; identifies unfavorable international terms of trade for primary products and the policies of aid donors as reinforcing pressures, which could encourage increasing cash crop production at any cost. This cultivation of cash crops on unsuitable rangelands could be forcing herders and their cattle onto marginal lands (thereby contributing to desertification) (UNEP, 2002).

Environmental issues are ignored in free market system, GDP used as an indicator of vibrancy of economy takes only the quantitative economic growth into consideration without taking into account the depletion of natural resources. Balochistan as being the integral part of Pakistan economy (Pakistan economy is under great burden of International Financial Institutions conditionalities since 1990---- one conditionality is to increase exports) has to bear constraints of national status and has to pool in national kitty per se her economic muscle. Since 1990 the weak ecosystems of rangelands have been burdened with fruit farming against original crop habits of rangelands to increase the fruit exports. Consequently the water mining for fruit harvesting has suck the ground aquifers, increasing the water stress.

Questionable binding force of environmental conventions: The three conventions were introduced, and signed, as the outcome of Rio Summit in 1992, namely:

1. United Nations Framework for Convention on Climate Change.
2. Convention on Biological Diversity.
3. Convention on desertification.

Despite these commitments the planet is still getting warmer. These outcomes occur because the absence of enforceable international regulatory and incentive systems.

The Drought in Balochistan: In contextual study of drought in Balochistan following points can be forwarded.

1. Balochistan up to 96% is comprised of rangelands.
2. At some points in Balochistan, the altitude level goes up to 8000 fts from sea level.
3. The whole of Balochistan is devoid of perennial rivers usually the river ways are filled with flash water floods.
4. The monsoon system is getting disturbed, because of global warming and it looses its strength for precipitation when it reaches the territory of Balochistan- as a result of increase in ocean temperature, and loss of western disturbances (comprised of Siberian cold winds).
5. The springs are vanishing, snowfall and precipitation is getting lower day by day, the groundwater is going down because of water mining.
6. This drought has proven itself severe and extensive in its longevity and spatial reference; because drought conditions persist in Afghanistan, Iran, and in other provinces of Pakistan sequenced as, Punjab, Sindh, and Sarhad.



7. War and poverty in Afghanistan has aggravated the drought and poverty conditions in the province of Balochistan. The direct consequences of Active Afghan war and scattered landmines are the blockage of traditional trans boundary migratory routes. The war has compelled the pastoralists, either to settle or rotate their flocks within the boundaries of Balochistan, who used to travel as far as the borders of Central Asian Republics and Russia.
8. There is lack of socio- economic analysis regarding the status of women in water stress.
9. Water through the ages has been perceived a free commodity as it was available in abundance. Still psychologically people do not feel to protect this source of life.

Precarious Water Management in Balochistan: Balochistan would be water stressed region with in a decade. It was predicted by a project report; which was carried on through a joint venture of Royal Netherlands Embassy and government of Balochistan in 1990-91.

Water problems also occur because of poor governance. Different cells of the irrigation department lack well-qualified, and trained personnel. The department relies on out dated equipments. Library facilities and computerized access to data are non-existent.

The Hydrology-geology directorate of WAPDA (Water and Power Development Authority), an institution working in ground water investigations and development has also been closed. The province does not have an effective and organized mechanism for the evaluation and monitoring of the performance of completed or on going projects. They are not followed under integrated approach. The projects also result in failures, because of poor/low cost recoveries from the project beneficiaries. The lack of understanding among the government agencies about the importance of community participation and the role of private sector, particularly the NGOs, in developing water sector and educating user communities pools into inefficient water development (Majeed, 2000).

Indiscriminate development of tube wells, has resulted in a rapid decline in water table in many parts of Balochistan region, where horticulture is practiced and electricity has reached. It is both technical and legislative to control the installation of tube wells. Political interference and lack of commitment on the part of government departments impair enforcement of the authority. The flash floods water is not utilized properly. The floods water causes revenue loss, besides damaging the irrigation and drainage structures.

Generally the powerful Maliks, Sardars or the MPAs are consulted before initiating any development activity. They have their own priorities and interests related to the project. Thus the development project instead being based on technical, socio-economic, environmental, or physiographic considerations; is designed to single person's interests. Illiteracy is a big handicap in promoting the rational use of water. Farmer's overuse and the general public are ignorant about the misuse of water. 47% water is being wasted during the water supply processes (Ibid).



III. Recurrent Conflict in Afghanistan

The economic agendas of involved states in Afghan plethora, and the inadequacy of international system to manage the conflict in Afghanistan to avoid its pernicious impact on Balochistan; supports the recurrent conflict in Afghanistan. Balochistan is trajectory of Afghan conflict, as the existing networks of Afghan conflict are linked to rest of world system through Balochistan whether it is hot pursuit of war, transit trade or opium politics.

Following factors remain to permeate the Afghan Conflict:

A. Natural resources at the heart of conflict

In at least in three clear ways, natural resources lie at the heart of conflicts that hold the potential for mass violence through the deliberate manipulation of resource shortages for hostile purposes (for example, using food or water as a weapon); competing claims of sovereignty over resource endowments (such as rivers or oil and other fuel deposits); and the exacerbating role played by environmental degradation and resources depletion in areas characterized by political instability, rapid population growth, chronic economic deprivation, and societal stress. In 1980's Russia persisted in Afghanistan to approach hot waters of Arabian Sea; but was resisted by the other countervailing force (United States of America) of cold war. In 1990's the Central Asian oil has emerged as the point of strategic and economic attraction. In fact the economic opportunities created because of collapse of Russia has caused the rift among the competing antagonists specially the Jihad wagers once strengthened by American led coalition deem themselves the righteous owners of natural bounties of Central Asia.

B. Uncertainty

This reality of international system dominated by the loss of genuine loyalty: where the actors whether they are individuals or entities with economic and political agendas or states are pursuing the material ends as the ultimate goal-----embosses the element of uncertainty. The uncertainty is linked to strategic apprehensions, food insecurity, political instability, politics of foreign aid and incoherence in conflict management instruments.

Survival of human beings is at risk, because of food insecurity, which has been increased sharply in recent years and remains high throughout Afghanistan, despite massive relief work, a change of regime and the presence of foreign/peace keeping military forces. The situation reverts back its impact on Balochistan.

C. The cultural identity

In existing international system cultural identity has succeeded the animosity existed between two economic ideologies of communism and capitalism-----but the objectives are again the economic gains. The evolutionary process of present cultural identity has been entwined with global vision of the West-----being the powerful and proactive.



The Afghan conflict is being gripped by the clash of civilizations philosophy. The factor which has supported the most Afghan conflict is the built up of Jihad spirit in 1980's on the basis of religion Islam.

D. Devaluation of justice and peace values

As recognized by UNESCO justice and peace are public goods and values----the most devalued in international normative context; when applied on Afghan context.

The Geneva Convention explicitly states that civilians should not be objects of attack and that acts that are designed to promote terror among civilians are prohibited. The war in Afghanistan has been in violation of the Geneva Convention.

The situation in Afghanistan remains tenuous because of following facts:

- US might gradually reduce its 15,500 troops immediately after nation-wide elections of September 2004. This move would fuel the growing perception among Afghans that the US and international institutions are once again turning their backs on the country_as they did after the Soviet withdrawal.
- US main interest in Afghanistan is not stabilizing the country or improving people's lives, but getting Hamid Karzai elected president and making Afghanistan look like a 'war on terror' success in time for US presidential election in Nov 2004.
- The ability of Karzai government to hold free and fair elections in Sep 2004 is skeptical. The US backed warlords continue to control parts of the country with impunity, they will also buy their positions in parliament. The others will resort to use force as they have little incentive to otherwise.
- The elections will be meaningless, because the people have no choice; who are the challengers of Karzai.
- Taliban by focusing their attacks on 'soft targets' such as aid workers and Afghan government employees, they have effectively halted the development work in one third of the country.
- Since the killing of a UN aid worker in Afghanistan Nov 2003, most international staff working for more than 30 UN agencies has been withdrawn from Afghanistan (BICC, 2004).



IV. International Conflict Management Strategies

“In fight of two elephants; grass suffers the most”

Chinese adage

The more powerful enjoy wider margins of safety in dealing with the less powerful and has more to say about which game will be played and how. Rummel has defined power in ecological terms as “the ability of one cluster of activities or niches to set the conditions under which the others must function” (1983).

International conflict management strategies are envisaged by G-8, international-national-provincial institutions through an invasive effect of multinationals. The international conflict management strategies are focused to detach the different factors related to conflict in Afghanistan-Balochistan: as the super powers and extra regional actors part of international conflict management strategies. Following are the main strategies.

- I. Conflict Strategies
- II. Post Conflict Strategies
- III. Post Conflict Economic Development Strategies

I. Conflict Strategies

Here conflict strategies means: translating the actual conflict into actions through different modes of violence; which can be implicit or explicit. Conflict strategies referred to Afghanistan vis-à-vis Balochistan has two dimensions: one is regional –international conflict practices and the other indigenous to Afghanistan.

Conflict strategies of US-USSR, 1979-88 were quite repressive and hi-tech oriented to turn the Afghan society into socio-economic debris and Diaspora. Both of the super powers tormented the state to create supputing segments of society, by providing financial aid, arms and ammunition. The demeanor of communication for US was mainly Balochistan.

The term ‘economy of violence’ focuses on a self-perpetuating system, in which violence itself emerges as a marketable good. From an economic point of view the immense number of combat groups, which existed at least until the appearance of the Taliban in 1994, can be regarded as ‘war enterprises’ adapted to a ‘market of violence’. Their main capital was their armaments and their main business was the maintenance of security for a certain territory and its inhabitants. Through the emergence of these combat groups, the vocational training of entire society changed. Due to devastation on agricultural resources, the inclination to be trained in agricultural or pastoral techniques declined. Membership in combat unit was much more profitable and even more secure than a civil occupation, such as being a farmer, with the daily risk of stepping on land mine and without adequate arms for self defense.



The main task of combat unit was to collect taxes from the inhabitants in return for ensuring security and to take toll from foreigners crossing their checkpoints. The militias were the largest and best-paying employers. The generation or maintenance of a feeling of general insecurity was the driving force, which made the combat unit indispensable. Impending danger lined the necessity for the existence of combat units. Only the Taliban, who emerged in 1994, managed to monopolize the economy of security. The alliance was built between traders and Taliban. The strategy of Taliban was to absorb the combat units, who directly profit from the security business in the past, into their own ranks. Cultivation of opium is also one of prominent branch of Afghan war economy. The war parties gain from the opium cultivation by collecting a tax of 20% on harvested opium from the dealers. Trans border trade: Based on Afghan Transit Trade Agreement goods are permitted to be imported tax-free via Pakistan into landlocked Afghanistan, and sold back in Pakistan (Conrad, 2000).

2. Post Conflict Strategies

Multinationals and international institutions are carrying out the reconstruction in Afghanistan. These strategies are not integrated and holistic; rather more focusing on selected areas supporting Karzai regime. They are not sustainable. They are not well incorporating the concerns of Pakistani reconstructors. For example the World Bank investment in this respect is more concerned about reconstructors other than Pakistanis. The strategies are based on the idea of hire and fire.

Data compiled by the Agency Coordinating Body for Afghan Relief (ACBR) has estimated that between 1994-1999; about 160 agencies, including UN relief bodies and NGO's had spent \$700 million on the refugees in Pakistan and community infrastructure development schemes in Afghanistan. Officials at ACBAR say that now thirty-three relief agencies are in the field in Pakistan. Donors have diverted funds towards Afghanistan. Only in Kabul, the number of registered NGO's is about 2,5000. Most of them are owned and managed by warlords, ministers and family members of former Jehadi leaders.

Wrapping from Balochistan in post conflict strategies replenishes the geology of conflict, because of networked symbiosis to Afghan conflict.

3. Post Conflict Economic Development Strategies

By virtue of its natural potential and position in international system as part of Third World Balochistan cannot escape traditional economic practices and conflict management strategies.

According to traditional trade theory, if each nation specializes in the production of the commodity of its comparative advantage, world output will be greater and, through trade, each nation will share gain. With the present distribution of factor endowments and technology between developed and developing nations, the theory of comparative advantage thus prescribes that developing nations should continue to specialize primarily in the production of and export of raw materials, fuels, minerals, and food to developed nations in exchange for manufactured products (Salvatore, 2000).



In next one and half year there would be \$1.5b investment in the oil and gas sector in Balochistan (DAWN, 2004). There are no restrictions on the foreign investors in any industry and on the strength of equity the foreigners could hold in any company. Similarly there is no bar on the amount of capital they can bring in or take out from Pakistan (Shaikh, 2004). Gawadar is home to a \$250 million port development project, a strategically important venture being built with Chinese help and funding (Ibid). The Gawader Port would be ready by the end of this year at a cost of \$1.1 billion with a huge container, dry bulk cargo terminal as well as grain and oil terminals. Plans are underway to establish a new city, an industrial zone, and oil storage and refining facilities adjacent to the port, which will also provide warehousing, transshipment and other related facilities necessary for smooth trade. More than 50 metallic minerals such as copper, gold, and iron, lead are discovered. Saindak Copper and Tethyan Copper projects are two examples of international interest in Balochistan mineral deposits. Six new oil and exploration concession agreements, covering an area of some 14,000 square kilometers, have been signed with local and foreign companies *2.

The governemnt intends to build seven new cantonments; namely, Gawadar, Awaran, Kuhlu, Kharan, Chaghi, Qila Abdullah, Qila Saifullah and Dera Bugti. The province of Balochistan will come under the umbrella specific to Military establishment of Pakistan. Such sort of predicament has virtual connection to regional and international geo-strategic and economic interest in Balochistan. New Water schemes are also in offing; namely Subgzai dam in Loralai, Mirani &Hingol dams in Makran.

The people of the province are not satisfied with the development projects as they are apprehensive that the foreigners will exploit their resources and they will get the eloquent share in developmental works, because of low human resource development. As Chua elaborates; democracy can be inimical to the interests of the market-dominated “outsider” minority. Market dominant minorities do not really want democracy, at least not in the sense of having their fate determined by genuine majority rule of locals (2004).

Measures for Effective Conflict Management Strategies

Following measures are recommended:

- The managers of International Strategies must try to increase the efficiency and effectiveness of political institutions. As economic take off will be marred by political turndown. It is not just “economic growth” which is important, but a specific economic development, which addresses the grievances of different groups, allows compromise between contending factions, and offers sufficiently attractive alternative to the main opponent.
- The concept of International Social Responsibility and states: The governments of developed countries should keep intact the systems or positive situations so as to promote their economic interests. They have to be highly aware of incoming conflict potential, as well as the general limitations posed by the situations.
- The national and provincial government needs to be mindful of local grievances and conditions prevailing in Balochistan and particularly Gawadar, so that these are not exploited by vested interests. Specific peace & justice packages using a combination of the enforcement model and the negotiated model may be introduced. The social responsibility at government’s level to shift the fruits of development to community level must become visible.



IV. Conclusion

The world is now a global system, whose stability can be jeopardized by the weakness of any of its components, however small. Every aspect of the functioning of world community must be viewed from the angle of global security. This approach, has been imposed by the trends of conflict, and entails looking at the world very differently. All failures in human progress: whether they are social, economic, ecological, and cultural or the result of violence, cause insecurity, not only in the areas where they occur, but worldwide. The links exist between conflict, globalization and stress on natural resources. It may be seen, in particular, that there is a contrast between the geopolitical location of conflict and the location of the intervention capacities available to manage them.

Water is non-renewable source. The international conflict management strategies have to incorporate water stress accounting. Otherwise the economic development will not sustain and hatch upon conflict (See also Box. 2).

Box. 2 Point of rationality of proposed water resource management in Balochistan

1. To make available to Balochistan; the water resources assessment technology, irrespective of its level of development, including methods for the impact assessment of climate change on freshwaters;
2. To have Balochistan, according to her financial means, allocate to water resources assessment financial resources in line with the economic and social needs for water resources data;
3. To ensure that the assessment information is fully utilized in the development of water management policies;
4. To have Balochistan establish the institutional arrangements needed to ensure the efficient collection, processing, storage, retrieval and dissemination of information about the quality and quantity of available water resources at the level of catchments and groundwater aquifers in an integrated manner;
5. To have sufficient numbers of appropriately qualified and capable staff recruited and retained by water resources assessment agencies and provided with the training and retraining they will need to carry out their responsibilities successfully.
6. To recognize water as a social, economic and strategic good in irrigation planning and management;
7. To formulate specialized programs focused on drought preparedness, with emphasis on conflict management and environmental safeguards;
8. To promote and enhance waste-water reuse in agriculture;
9. To prepare strategies in good times. According to Arid Zone Research Institute occurs in every decade.



The region like Balochistan is vulnerable to climate change and is also under pressure from forces such as population growth, resource depletion, and poverty. Policies that lessen pressures on resources, improve management of environmental risks, and increase the welfare of the poorest members of society can simultaneously advance economic development and equity, enhance adaptive capacity, and reduce vulnerability to water stress. Arresting water stress in Balochistan depends squarely on international cooperation vis-à-vis conflict management strategies. The evidence suggests coordinated actions among institutions and sectors may help to reduce concerns and potential conflict.

A prudent conflict management strategy requires a careful consideration of the consequences (both environmental and economic), their likelihood and society's attitude. Due to this fact it is confirmed that the value of better information about water stress processes and impacts and society's responses to them is likely to be great.

It is found that at national level the water situation has not been well taken into account while negotiating to donor agencies, on permanent bases regarding future predictions plus the conventions on climate change, desertification, and biodiversity, which are signed by Pakistan. No potential steps have been taken to implement them- the reasons are political, economic and environmental crises being faced by the state particularly in 1990's simultaneously.

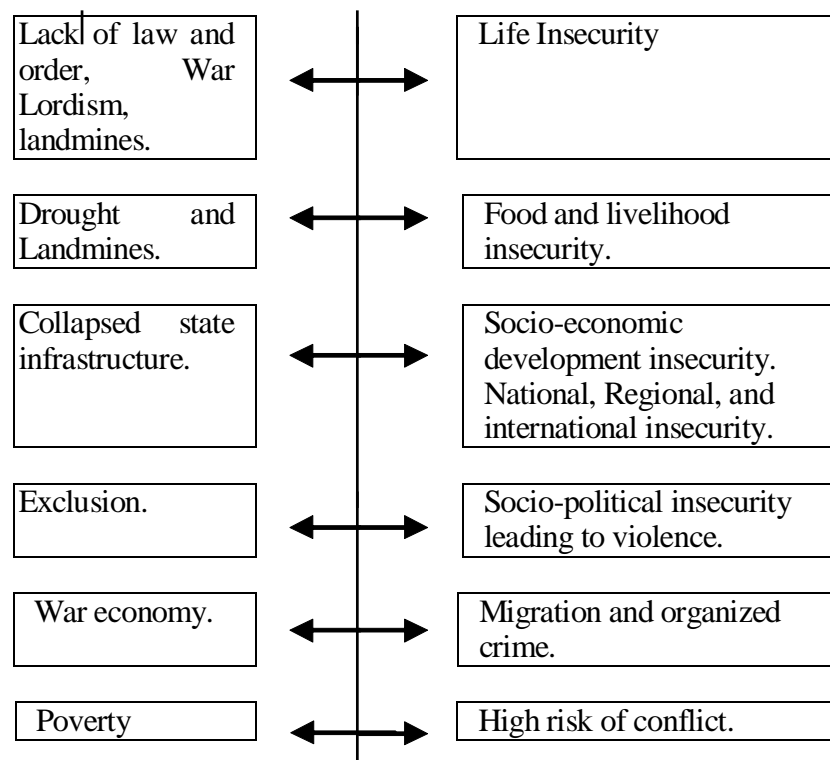
The paper establishes that the Afghan conflict is perceived: differently by Afghans, Pakistanis and Americans, according to its different effects on them. Since 23 years of war the most effected are the Afghan civilians. They have beaten up ruthlessly by warring governments and factions. They became refugees or displaced, experiencing mass dislocation at social and economic level. The effected Afghans have tremendously effected the human and natural resources of Balochistan (See Figure. 1). It is found that time and again changes by different structures working in Afghanistan, whether legal framework of governance, International Institutions-National Institutions-Provincial Institutions-Community Institutions, or the vague postures of war economy and its related networks tried to turn the jigsaw of society according to their own interests, by excluding so and so segments of society. Such moves promoted violence with in the society. War economy is perceived as being one of the main sources of insecurity. Social inequities reflect flagrant injustices and are a cause of insecurity because of the reaction, they provoke. The Afghan conflict has broader impact on Balochistan. The conflict management strategies carried on through Balochistan towards Afghanistan has established war economic trade links the effects of which, the province cannot escape on its socio-political structure.

It is found that it is not in the interest of players of globalization to tolerate the existence of hot conflicts because of economic and commercial reasons. Now they have started more focusing III type of conflict management strategy according to this paper in Balochistan. The location of infrastructure projects can have an immediate impact on the power structure in Balochistan. The resistance by political structure is inhibiting the economic development.



The existing conflict management strategies are unsustainable. One may fear the arrogance of the global burden-bearers more than the selfishness and of those who tend to their own narrowly defined interests. The politics of economic development overshadows the virtual objective of development, and above all overlooks its impact on natural resources; particularly the emerging water stress. While transforming the conflict the economic development may create more generic conditions for conflict in the province.

Crises of Insecurity: Cause and Effect



The existing trend of investment in Balochistan will increase the population pressure on natural resources of Balochistan. More water will also be required for development projects and establishment of cantonments. As per relation of water stress to climate change, regional conflict in Afghanistan, and legislative lapses in management processes the existing trends are likely to continue in Balochistan. To end conflict in contentious world, would require as much wisdom as power. The security and management of water resources would be one of the sources to prevent conflict.

Dr. Dorothy Rowe, in her book, "The Real Meaning of Money," writes: Saints often love humanity but neglect the needs of individuals just as a country with a growing economy can be devoted to progress while its people are suffering.



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Endnotes

- *1. *The Intergovernmental Panel on Climate Change* (IPCC) was jointly established by World Meteorological Organization and United Nations Environment Program in 1988 to assess the scientific and technical literature on climate change, the potential impacts of changes in climate, and options for adaptation to mitigation of climate change.
- *2. It was the punch of an International Investment conference; which was held in Quetta by the National Investment and Privatization Board of Pakistan on, 8th May 2004. 250 major investors including delegates from 50 countries attended the conference.



**International Conference on Environment: Survival and Sustainability 19-24 February 2007
Near East University, Nicosia-Northern Cyprus**



UNDP-ACT – BUILDING ENVIRONMENTAL BRIDGES IN CYPRUS

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Environment is a double-edged sword; it can be both a cause of conflict, for example when water resources are unequally shared, as well as a potential tool for conflict resolution (since it forces people, who otherwise may be divided by politics, to cooperate in order to resolve problems that demand collective action).

From an Ecological point of view, the Green Line does not exist as a separate ecosystem. Of course, we have all seen the barbed wires, the walled-up buildings, the checkpoints, and the minefields. But has air pollution ever stopped at Ledra Palace to show its passport? Will a virus be halted by a minefield? Doesn't the grass grow beneath the fences? This island is series of integrated ecosystems, which are not neatly divided according to political and military boundaries, and therefore environmental issues in Cyprus can only be addressed on an island-wide basis. In fact, recent health scares such as the global avian influenza epidemic have raised concerns in Cyprus relating to ensuring island-wide control of disease and other environmental health risks.

Since the main objective of ACT is to promote cooperation and trust between the communities on this island, Environment is the natural place to start. It represents the shared values and common natural heritage of all the inhabitants of Cyprus. Moreover, as an office of the United Nations, we are keen to implement the Millenium Development Goals (MDGs - <http://www.un.org/millenniumgoals>), a series of eight principles to eradicate world poverty, and in particular:

- ⇒ **MDG 7** – Ensure Environmental Sustainability
- ⇒ **MDG 8** – Develop a Global Partnership for Development

Similarly, we follow the ten principles of the United Nations Global Compact (a set of voluntary rules for businesses to ensure corporate social responsibility – www.unglobalcompact.org), and in particular:

- ⇒ **Principle 7:** Support a precautionary approach to environmental challenges;
- ⇒ **Principle 8:** undertake initiatives to promote greater environmental responsibility; and
- ⇒ **Principle 9:** encourage the development/diffusion of environmentally friendly technologies



As a result, one of our three thematic priorities is to promote partnerships for sustainable development in Cyprus. ACT takes two approaches towards environmental sustainability:

- ⇒ We ensure that ALL our projects undergo an environmental impact review, and strive to minimise the environmental impact of these projects.
- ⇒ We run environmental projects in three areas:
 - Advisory Groups
 - Advocacy and Awareness
 - Technology Transfer

Advisory Groups:

One way to ensure that experts from both communities can work together on environmental issues of common concern is to create thematic, informal, advisory groups, where these experts can participate as individuals and exchange ideas and information in a neutral context. At the moment, there are two such advisory groups in existence, and one in development.

1. The Madison Dairy Advisory Group (www.madag.info)

This is the longest-established of the advisory groups, and helped pave the ground for the concept of advisory groups. The Madison Dairy Advisory Group (MADAG), offers technical expertise to all dairy farmers on the island. It was formed in April 2003 following a visit to Wisconsin, USA. Greek Cypriot and Turkish Cypriot representatives from the dairy industry attended a comprehensive training programme to the Babcock Institute for international Dairy Research and Development. This visit was funded and organized by the Bi-communal Support Program which is administered by AMIDEAST. The aim of the visit was to bring together various members of the industry to form an alliance in order to open up new opportunities for all.

MADAG includes representatives from the private and public sector of the dairy industry in Cyprus. The activities of MADAG are co-designed and co-implemented jointly by experts of both the Turkish Cypriot and Greek Cypriot communities, a level of cooperation that is unique for Cyprus. It works on industry-wide improvement, from farm improvement to the expansion of exports, while also focusing on competitiveness and trade. During the visit to Wisconsin, unprecedented events took place in Cyprus. For the first time in nearly 30 years, passage across the green line became possible for all Cypriots, which allowed MADAG meetings to take place more easily.

As early as the late 1990s, Greek Cypriots and Turkish Cypriots have recognised the potential for bi-communal cooperation in the production of agricultural products, in general, and dairy products, specifically. However, the industry in both communities faces serious threats. The small size of the island results in limited production capacity and small local markets. By working together to increase production, improve quality to meet EU and US standards, and market Cypriot products internationally, the Cyprus Dairy Industry (CDI) will be strong enough to overcome the serious challenges it faces. With the strong working relationships already formed, trade between the Greek Cypriot and Turkish Cypriot communities will improve once the political barriers fall away.



MADAG projects include:

- School milk project: Promoting the consumption of milk in schools
- MADAG training farms: when completed, this project will allow for provision of practical, hands-on training for dairy farmers island-wide in order to improve dairy farming methods and dairy waste management, as well as to ensure compliance with relevant regulations and standards and improve trade across the buffer zone.

2. The Cyprus Organics Advisory Group (www.cyprusorganics.info)

Following a successful workshop on Organic Farming, the Cyprus Organics Advisory Group was established in 2005. This group is composed of organic farming experts and aims to share expertise, information and guidance on matters related to the production and consumption of organic products in Cyprus. The group seeks to raise awareness amongst consumers and farmers about the benefits of this method of production that include improved public health and a safer environment for generations to come.

The environmental rationale for this advisory group is that after decades of conventional farming, Cyprus is facing serious issues of soil and water pollution, groundwater resource depletion, and severe threats to biodiversity. Cyprus can never hope to compete with larger EU countries by following a farm intensification strategy, but as a small island, it could aim for the quality niche market of organic farming, helping to minimize the stress on the environment and providing healthy food for the public. The group is bi-communal by nature, since Greek-Cypriot and Turkish-Cypriot farmers have a lot to learn from each other in terms of best practice for organic farming, and there is considerable interest in promoting the trade of organic produce across the green line.

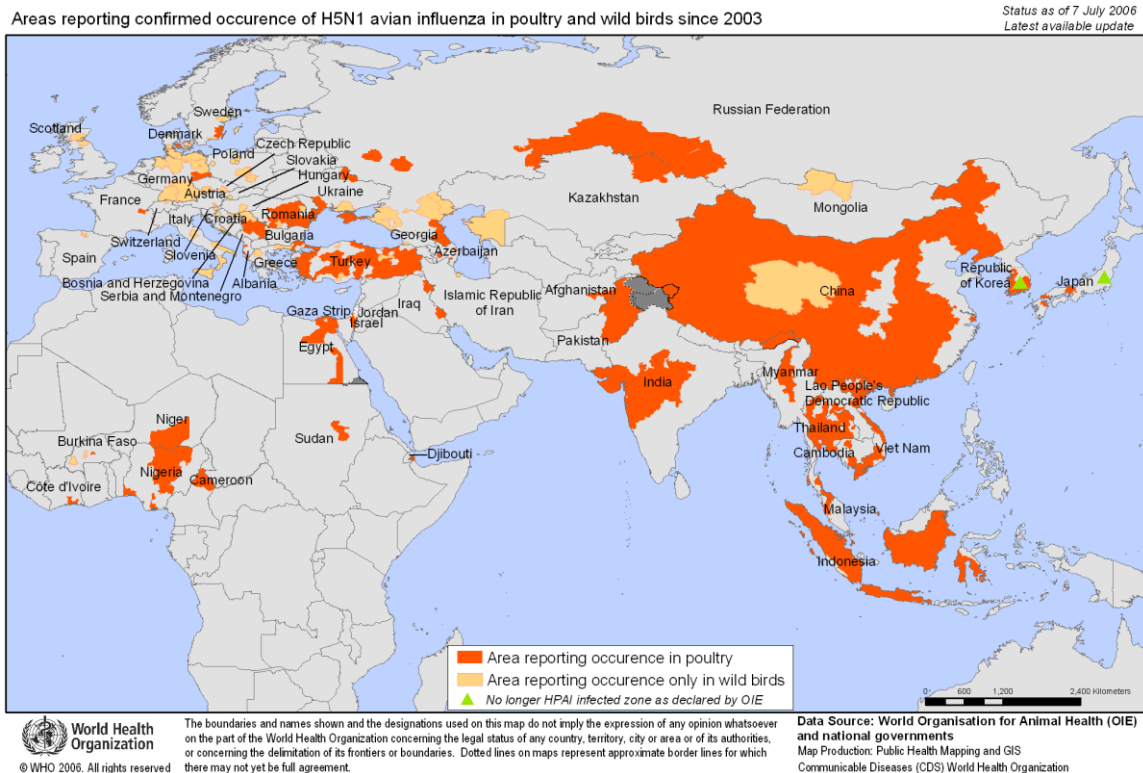
COAG projects and activities include:

- ⇒ Participation in 2005 in the International State Fair and the Turkish Cypriot Agricultural Fair
- ⇒ Technology transfer projects (described below)
- ⇒ Promoting Organic Farming in Schools (in the final stages of approval)
- ⇒ Creation of a Centre for Organic Research and Education (currently undergoing approval)
 - when launched, this project will allow COAG to provide practical training to organic farmers and hopefully encourage conventional farmers to embark on a conversion process.



3. Emergency Disease Coordination Group

Cyprus is one of the main bird migratory routes, and in close proximity to countries which declared human cases of avian influenza in 2005, such as Turkey. The country is therefore at risk. Indeed, when challenged with a potential avian influenza threat in early 2005, UNDP-ACT took the lead in facilitating coordination meetings between all the relevant stakeholders, including the Greek Cypriot and Turkish Cypriot Veterinary and Health experts, as well as UNFICYP and the Sovereign Base areas. Prompted by the threat of Avian Influenza in Cyprus, the proposed Emergency Disease Coordination Group project aims to create an informal but influential bi-communal forum, the Emergency Disease Coordination Group (EDCG), in order to ensure a rapid and coordinated island-wide response to any public health emergency. If this project is approved, the meetings of this bi-communal group would be held under the auspices of ACT and it will be composed of top level Veterinary and Health experts, **in their individual capacity**, and will have rapid access to all relevant stakeholders required for coordination in the case of an emergency.





Advocacy and Awareness

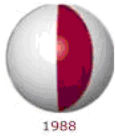
Ensuring a healthy environment is the collective responsibility of all the inhabitants of Cyprus. Knowledge about environmental issues is the key to ensuring that we all exercise this collective responsibility. This is the reason why ACT is involved in environmental advocacy, through projects such as the ones listed below.

1. Ecoforum – World Environment Day

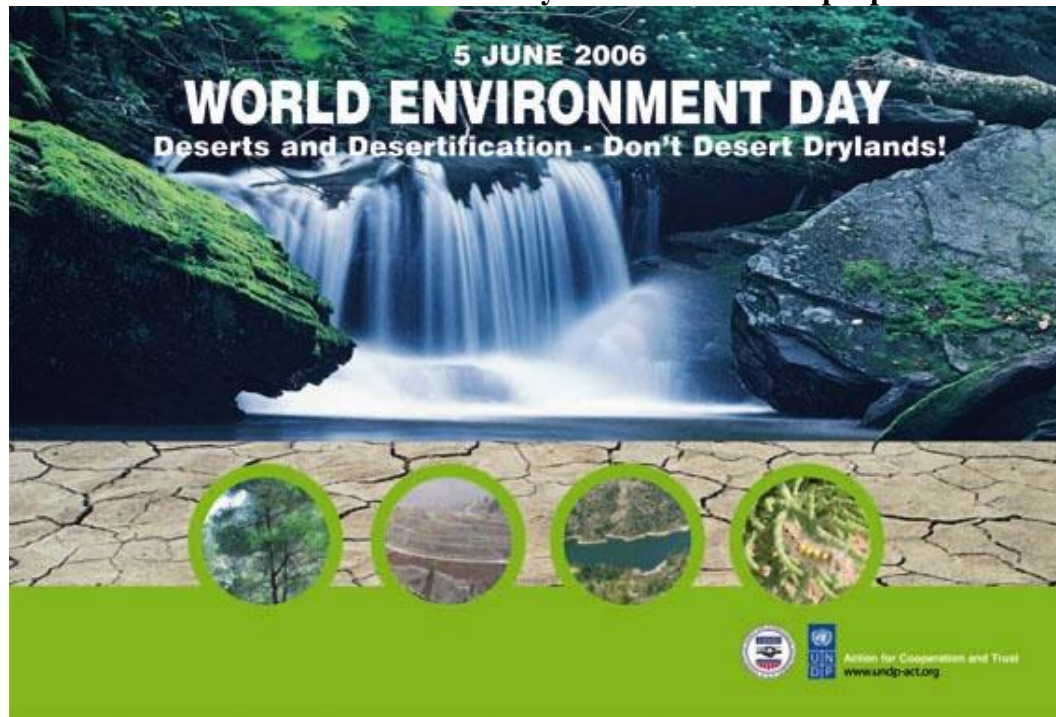
This seminar was aimed to celebrate World Environment Day 2006⁵³, whose theme of Deserts and Desertification was particularly relevant to Cyprus, which is experiencing an ever-more negative water balance. In Cyprus, ACT organized a series of activities:

- *The Ecoforum World Environment Day conference*, which took place at the Holiday Inn in Nicosia on the 5th and 6th September 2006. The event, attended by 140 participants, created an opportunity for Cypriots to come together to discuss how they can protect their common environmental assets and heritage. The presentations focused on water issues in Cyprus, as well as the impact of business on the environment. Two workshops focused on corporate environmental responsibility as well as the relationship between NGOs and the media. Representatives from all over the island and abroad, from academia, business, the media and the authorities, as well as civil society, participated in the sessions.
- Four *World Environment Day Projects* undertaken by NGOs were also funded:
 - 1) The Sandstone Olive Tree project focused on saving olive trees from road-building and other construction projects
 - 2) Another project, implemented by the Near East University as well as local and international partners, was entitled “Management and Assessment of Cyprus’ Artificial Wetlands”, and focused on the biodiversity value of wetlands on the island.
 - 3) A third project, implemented by Intercollege, focused on the impact of desertification on agriculture in Cyprus
 - 4) The fourth project, implemented by Birdlife Cyprus, focused on desertification and organic farming
- A special world environment day supplement was distributed through local newspapers on the environmental problems facing Cyprus today (<http://www.undp-act.org/main/default.aspx?ItemID=161&mid=108&tabid=43>)

⁵³ For more information about WED 2006 globally, please consult: <http://www.unep.org/wed/2006/english/>



The Ecoforum World Environment Day attracted over 140 people



2. Global Compact Cyprus Environment Survey

This project is an ideal opportunity to build bridges between the business communities in Cyprus, through our commitment to the environmental principles of the Global Compact. The aim is to publish a high quality report on the impact of business activities on the Cypriot environment island-wide, providing policy recommendations for sustainable business within the framework on the UN's initiative on Corporate Social Responsibility – the Global Compact. This project will be undertaken by a group of local and international consultants, under the auspices of ACT and the Cyprus Chamber of Commerce and Industry, as well as the Turkish Cypriot Chamber of Commerce. The project aims to generate a new and more dynamic public and policy level dialogue on the impact of business on the environment. This impact will be measured by assessing the increase in the level of awareness and application of Global Compact corporate responsibility standards undertaken by business and civil society.



3. Cyprus Environmental Stakeholder Forum

In Cyprus, the environmental community is fragmented, and often lacks a voice on the global stage. The aim of this project, based on the experience of the advisory groups and the Ecoforum, is to create the conditions for the eventual establishment of a bi-communal platform of environmental stakeholders willing to agree on a list of common environmental priorities which they would advocate at international environmental events, such as the UNEP Global Programme of Action (GPA) Intergovernmental Review. The stakeholders will not only work together on a common agenda for the event, but after their participation would be encouraged to work towards the long-term goal of a common, bi-communal environmental platform aimed at effecting island-wide changes for addressing their selected issues. In Cyprus, the environmental civil society can only benefit from a stronger voice through the creation of a common island-wide forum. Key partners in this project will be the Cyprus Technical Chamber (ETEK) and the Turkish Cypriot Union of Chambers (KTMMOB), who recently produced a seminal report on the need for bi-communal cooperation between environmental experts⁵⁴. In terms of membership, the stakeholder group will be multidisciplinary and open to a wide range of members, including:

- ⇒ Environmental NGO representatives
- ⇒ Environmental Educators
- ⇒ Journalists who tend to cover environmental issues
- ⇒ Environmental engineers
- ⇒ Leading environmental academics
- ⇒ Key business leaders interested in the Global Compact

4. Buffer zone campaign

I mentioned earlier that from an ecological point of view, the buffer zone does not exist as a separate ecosystem. Whilst that is true, the buffer zone has been untouched for 32 years, and has therefore become a haven for endangered species, such as the famous Cyprus Moufflon. It has also become a haven for pests, such as rats and mosquitoes. The UN family is working with both communities on preserving our common natural heritage within the green line, and stemming any public health threats that might emerge from the buffer zone. In particular, we recently launched a campaign in partnership with UNFICYP regarding issues of mutual concern for the inhabitants of Cyprus, no matter which side of the green line they live on. Some of the issues we are dealing with are:

- ⇒ Forest fires – there is a clear need for an integrated response in the buffer zone
- ⇒ Public health –joint contingency plans in the event of an avian influenza outbreak
- ⇒ Conservation – for example of the Cyprus Moufflon
- ⇒ Pollution – air and water pollution easily cross the buffer zone
- ⇒ Uncontrolled dumping –building awareness of the dangers to public health

⁵⁴ This report can be found on our website (www.ACT.org)



Our campaign started with a series of posters in the Buffer Zone, inaugurated on UN day in October. We plan to follow-up on that with a series of partnerships with communities living near the buffer zone, before reaching a wider island-wide audience.

Technology Transfer

Promoting awareness is often not enough. Whether one is advocating organic farming or corporate environmental responsibility, one needs to provide potential partners with the means to ensure environmental sustainability. Having recognized this need, ACT is supporting certain projects which are aimed at improving the state of the environment island-wide whilst at the same time creating organizational networking opportunities between experts from both communities:

1. Innovative Biological Approaches for the Reforestation of Environmentally-Stressed Sites

This project aims to introduce mycorrhizal technology in order to improve reforestation efforts in environmentally-degraded sites such as abandoned mines and quarries. It will also help reinforce technical exchanges between Greek Cypriot and Turkish Cypriot foresters. Mycorrhizae are a symbiosis occurring between certain fungi and plants, which result in an improvement of the plant's root system, giving the plant better access to nutrients and water, as well as protection from soil contamination and soil-borne plant pathogens. Mycorrhizal communities have existed for billions of years and concern over 80% of terrestrial plants, but have disappeared in many parts of the world due to human activities resulting in soil pollution and erosion of topsoil. Over 50,000 trees will be planted at various sites across the island, and the mycorrhizae will be an essential element in ensuring their optimal growth. As part of this project, a workshop on mycorrhizae was held at Ledra Palace and at ACT's offices between the 22nd and 24th of May 2006. Over 90 people, from both communities, attended the event, which included lectures by internationally-renowned experts, as well as practical demonstrations in the laboratory and field visits.



The IBARESS project aims to reforest severely eroded slopes such as this one in Gypsou (Akova)

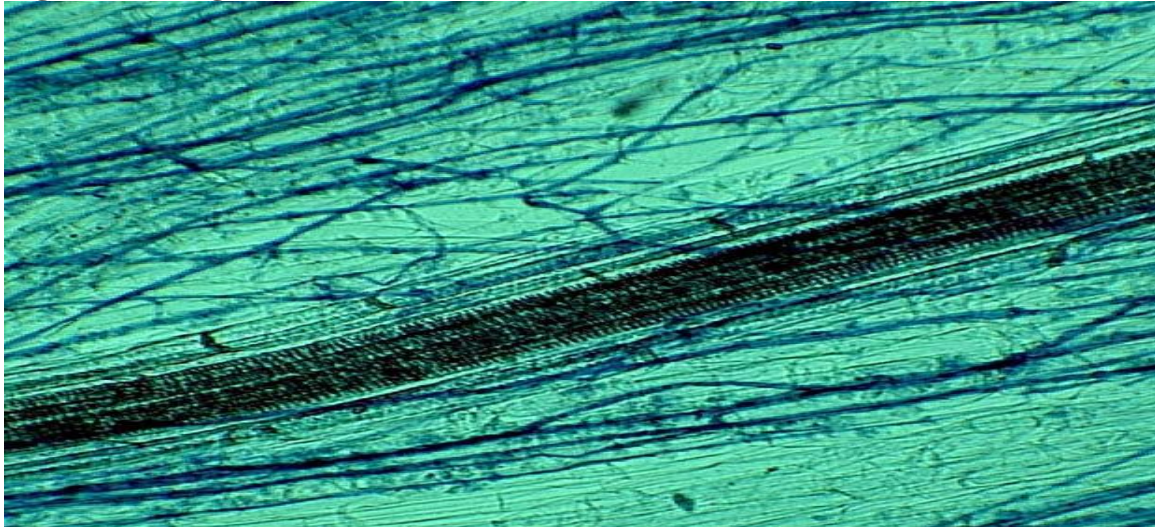


2. Mycorrhizae for Vegetable Farming in Cyprus

Mycorrhizae are also useful as a substitute to chemical pesticides and fertilizers, and are therefore a vital tool for organic farmers, since they are a natural means to improve the vitality and growth of crops. As part of this project, and in partnership with the Cyprus Organics Advisory Group, agriculture experts from both communities will be testing mycorrhizae on different types of greenhouse vegetables (potatoes, onions, thyme, lettuce) in order to demonstrate their effectiveness. The workshop described above also covered the agricultural applications of mycorrhizae.



Mycorrhizae, seen here as blue filaments inside a root, have enormous potential for organic farming



Conclusion

Thus, environment is one of the three pillars of ACT, and will continue to be so until September 2008, when our programme ends. However, most of us are local staff, and will remain in Cyprus for the foreseeable future, so we all hope that bi-communal environmental cooperation doesn't stop there, but blossoms into a permanent island wide partnership, no matter when or how a solution to the Cyprus problem is found. As mentioned in the invitation to this conference, **we cannot afford to wait another ten years!**



INTERNATIONAL EFFORTS DIRECTED TOWARDS BLACK SEA ENVIRONMENTAL ISSUES

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Black sea had been a strategical boundary among the west and east throughout the Cold War. The tension arrived from the Cold War had prevented littoral states to take precautions oriented towards a serious cooperation for environmental issues. The viewpoints have begun to change after the dissipation of the Soviet Union. The process that began with the 1993 Bucharest Convention continued with the 1993 Odessa Ministerial Declaration and Black Sea Environmental Program (BSEP) based on the 1996 Strategic Action Plan for the Rehabilitation and Protection of the Black Sea. In this Paper cooperation process directed towards Black Sea environmental issues has been evaluated in terms of regional states, non-governmental organizations and international institutions such as United Nations, European Union and Organisation on Black Sea Economic Cooperation.

General View

Black Sea is the world's biggest semi-closed and anoxic sea basin. Although it is described as a semi-closed sea that its shores are shared among six littoral countries, it owns a drainage basin that reaches five times bigger than its own largeness. Not only the Danube river basin that includes one third of European continent, but also the big river basins such as the Dniro, the Dniester, the Don, the Kuban and the Kızılırmak, approximately thirty rivers pour out to Black Sea. Black Sea impact area comprises twenty-two countries including six littoral states and 160 million people. In recent decades Black Sea has become the world's most harmed regional sea because of various pollution types and environmental factors. Ecological balance is being damaged increasingly and biodiversity is being effected in an unfavorable manner from that.

Despite the fact that environmental problems related to seas extend as far as long ago, entering of these problems to international public opinion caused on the sea sourced environmental disasters that happened in 60's. In 1972 Stockholm conference for which gathered in order to find solutions to environmental issues in international level, sea pollution had been held seriously and it's decided to initiate Regional Sea Programmes in the leadership of United Nations Environment Programme that established as an outcome of the Stockholm Conference.



The first sample of regional sea programmes developed for closed and semi-closed seas which were in serious situation in terms of the density and the dimensions of the pollution problems was Baltic Sea Programme and the second was UNEP leading Mediterranean Environment Programme. The Black Sea Environment Programme has been delayed from Baltic Sea Programme about 20 years and among this period International Community succeeded to constitute regional sea programmes concerning 130 states in 10 different regions. While the participating states to this programmes activating for the environment problems in their own region one would think that Black Sea, which stands against enormously serious and multidimensional problems, had been forgotten and it was neglected as if there was'nt any pollution problem. In 1976, inclusion the Black Sea to the agreement has come to the agenda while developing the regional environment regime in Mediterranean, but the application area has been limited only with Mediterranean with the opinion that the Soviet Union, Romania and Bulgaria will prevent to carry out the stipulated action plan trustworthy in the region .

Pollution in Black Sea and Environmental Issues

The pollution amount that moves from various sources to the Black Sea is 20.000 kg per a kilometer cube water for a year. If the Mediterranean which has six times bigger surface area and seven times bigger water volume, taken into consideration, the in question pollutants for the same amount of water is 3.775 kg for a year. With other words if one takes into consideration that the Black Sea is being polluted five times more than the Mediterranean, it can obviously be seen how the dimensions of Black Sea Environment problems are frightful .

The eutrophication of the Black Sea due to excessive loads of nutrients via the rivers and coming directly from the coastal countries has led to radical changes in the ecosystem since the 1960's . It is obvious that the decline of shelf seas ecosystems to eutrophication related with increased loads of nitrogen and phosphorus . Especially nutrient pollution is the common threat that links an array of problems along nations, including eutrophication, harmful algal blooms, fish deaths, dead zones, shellfish poisonings, loss of sea grass and kelp beds, some coral reef destruction and even with marine mammal and sea bird deaths . The eutrophication in the Black Sea was reversed during the early 1990's as nutrient inputs decreased following the dissipation of the Soviet Union and sharply drop of fertilizer use in Eastern Europe. But the decrease was temporary, however both nutrient inputs and eutrophication in the Black Sea have reached an all time long .

Much of these loads arise from major rivers, notably the Danube but also from smaller sources in all Black Sea countries. According to the estimates 70% of the dissolved nitrogen and phosphorus entering the Black Sea comes from the six littoral states, via dispose through the major rivers or from direct sources. The remaining 30% arises from the 11 non-coastal countries that belongs to Black Sea Drainage Basin and there is enough evidence to believe that these countries are responsible for these loads. Moreover in addition to the dissolved nutrients which enters the sea, estimates for nitrogen compounds suggests that an amount equivalent to 50% of the dissolved may be entering the system from atmospheric sources or indeterminated origin. But the the dissolved load is particularly significant and directly impacts the shelf zone systems which are critical to the health of the overall Black Sea Ecosystem .



One of the main causes of the Black Sea pollution is due to the Danube River and it is subject to increasing pressure affecting the supply of drinking water, irrigation, industry, fishing, tourism, power generation and navigation and also Danube is the final destination of wastewater disposal. These intensive uses have created severe problems of water quality, quantity and drastically reduced bio diversity in the basin. Today Danube is densely effected by agriculture and the pollution ends up in Black Sea and effects its north-west shelf heavily.

All Black Sea countries contribute to the contaminant loads entering the Black Sea. In the case of nutrients, the contribution is directly related to agricultural drainage with lesser contributions from domestic sources and industry. The recent situation is particularly good according to 70's and 80's but unless urgent measures are taken to keep nutrients on land, the recovery of the Black Sea may be reversed as economic conditions improve and the use of chemical fertilizers increases .

Black Sea coastal waters are still heavily suffered by sewage, related with the weak economies of the coastal states. In most countries there is a serious lack of transparency on sewage indicators. Independent investigations and epidemiological data suggests that this situation is serious and needed urgent measures. The oil pollution doesn't seem to be generalized but impacts coastal areas around river mouths, sewerage outfalls, industrial installations and ports. There is no evidence of significant heavy metal pollution in the Black Sea. Another pollution type is radioactivity and a significant higher concentration of human made radionuclides has been monitored. Current level doesn't seem to pose a health hazard to human health but the current situation is an indicator for future. There is no evidence of system-wide pollution of the pesticides and other persistent organic pollutants. However levels of these substances in some nearshore areas are elevated. Current coastal zone data are restricted with a few sites and being monitored through the efforts of Black Sea Environmental Programme. In this subject most of the historical data is unreliable and it is necessary to make a study of all coastal countries in order to detect contaminated zones .

The biodiversity in the Black Sea is in great danger too. Especially species like Sagitta, Kopepod, and Kladoser which composes the main feed of Planktonic fishes are decreased sharply. The main reason of decrease is eutrophication. Disappearance of Zooplankters as an outcome of pollution which has great value in Anchovy feeding is one of the effective factor in anchovy's length. Pollution not only reduces some of the organisms in environment but also causes to extremely increase of some of the organisms as well. Some of the micro organisms such as Mnemiopsis leidyi which throws Black Sea into confusion and which feeds with fish spawn and larvae can cause great declines of decrease in Anchovy stocks. According to observed shortening compared to age-length composition in Black Sea Anchovy, it is clear that these fishes are being effected more by pollution than overfishing .

Domestic sewages are effecting the pollution on the rivers and streams which pour out to Black Sea. For instance in recent years the spawning area of Black Sea Trout, Ikizdere and Firtina streams are in increasing threat of pollution. It's observed that sewages of the settlements on both sides of the streams discharge to rivers without enforcing any purification process. year by year increasing mountain and mountain pasture tourism contributes to the pollution too .



Another component which triggers pollution is toxic barrels that thrown to the sea. 364 pieces of barrels including various toxics had been found in Turkey's Black Sea coast in 1988. Barrels had been emptied by local people and most of them used to store rain water and food. Stomach nausea and having red skin is observed in some of the people whom contacted with the barrels. It was reported that a cow died because of eating toxic waste from the barrels. Furthermore dead birds, fishes and dolphins had been observed .

Marmara Sea is contaminated too in connection with the Black Sea pollution. Both The Black Sea's effect and Marmara Region's own condition's play role in this situation. More than 20% of Turkey's populaton lives around the region and important part of Turkey's industrial establishments set especially between Istanbul and Izmit . The disposals of this establishments, sewages come from cities and nutrients rooted from agricultural area which flows into sea via rivers polluted the Marmara Sea despite the existing streams between Mediternean and Black Sea. Some part of the pollutants passes through the Black Sea but the main part remains in Marmara.

Navigation is an another factor. Ships directly release their sintine and ballast waters to the sea. Normally this discharge must have done in ports but because of its cost, it usually done in sea. Balas waters causes to enter exotic organisms from different seas. Mnemiopsis leidyi which caused eutrophication has entered the Black Sea as a result of that kind of transportation.

The accidents such as Amacco-Cadiz and Exon-Valdez had shown us how the oil transporting with tankers dangerous is. This accidents means a warning for Istanbul which assumed as one of the world's cultural heritage and which densely populated on both sides of the Istanbul Strait.

Nowadays the Turkish Straits are being used extremely, by oil tankers and the traffic is quite tight. That is caused from the Russian oil and it is transported with tankers from Novorossisk and Tuapse terminal ports to Europe and other customers via Turkish Straits. These straits are narrow and have strong surface streams and Turkish authorities could'nt oblige these ships to get guide captain because of Montreux Convention's limiting articles. There have been big tanker accidents such as Independenta and Nossia in Turkish Straits at the past and we know that an oil tanker accident or blow up may cause a great disaster in todays circumstances. Increasing use of oil tankers invites this disasters to both Marmara and the Black Sea. We must not forget that we will not be able to recover the Black Sea for decades if an oil contaminant expension happened as a result of such an accident. Recovering would take long time and surely it would not be cheap. According to 2005 statistics, 10027 tankers passed through Istanbul Straight and 8813 through Dardanelles. This data shows the dimensions of the tanker shipping both in Turkish Straits and in the Black Sea and also shows how the risk is huge. The most rational solution seems to build reliable pipelines. This will provide both continuity of the oil and minimizing the environmental risks.



Another risky dimension of shipping which threatens the Black Sea is nuclear waste transporting. It is reported that four ships loaded with a nuclear element, uranium which is used to make nuclear fuel and bomb has passed through straits since 2004. Competents declared that one ship loaded with radioactive substance in 2004, two in 2005 and one in 2006 passed by the straits. According to the agreement which European Union and Russia made, Russia accepted to store 20.000 tons of nuclear waste in Siberia for an amount of 21 billion dollars. Competents announced that 8.000 tons had passed and 12.000 will be passed until 2012 . If the amount of the nuclear waste is taken into consideration, it may cause great environment disaster in case of discharge of this loads to sea as a result of an accident. Therefore the international community have to find more reliable ways to store this wastes and shipping must not be an option. Also the responsible sides have to avoid making such agreements.

While the Black Sea is getting face to face with environment circumstances caused of gradually increasing speed of pollution, the studies are being made at the same speed for protecting the natural environment of Black Sea. The region got ready to make cooperations in environment issues at least after the dissipation of the Soviet Union. Furthermore in the recent decade European Union's interests and sensitivity through the region increased due to the Romania and Bulgaria's realizing EU membership at the latest 2008 and the possible membership of Turkey in the near future. In addition to European Union, United Nation's Environment and Development Programmes, World Bank funds, various institutions and individual states struggles to achieve some programmes to protect and recover the Black Sea Region.

International Efforts Directed Towards Protecting The Black Sea

The first and the most important attempt to realise a cooperation and to protect the region was Convention on the Protection of the Black Sea Against Pollution also known as the Bucharest Convention. It was signed by the 6 coastal countries of the Black Sea Romania, Bulgaria, Georgia, Ukraine, Russia and Turkey. It was adopted in 1992 and entered into force in 1994. The implementation is co-ordinated by a commission with a permanent secretariat in Istanbul. Convention includes a basic framework of agreement, three specific and an additional protocol . These are:

- Protocol on Protection of the Black Sea Marine Environment Against Pollution from Land Based Sources; adopted 1992, in force 1994.
- Protocol on Cooperation in Combating Pollution of the Black Sea Marine Environment by Oil and Other Harmful Substances in Emergency Situations; adopted 1992, in force 1994.
- Protocol on the Protection of the Black Sea Marine Environment Against Pollution by Dumping; adopted 1992, in force 1994 .
- Black Sea Biodiversity and Landscape Protocol, signed in 2003 .

The Black Sea Commission (Commission for the Protection of the Black Sea against Pollution, BSC) was established following the provisions of the Bucharest Convention. A Black Sea Activity Centre for Environment and Safety Aspects of Shipping has been established in Bulgaria, one on Integrated Coastal Zone management is found in the Russian Federation, one on Land-based Sources of Pollution in Turkey, and one on Pollution Monitoring and Assessment in Ukraine .



The second and the complementary step was The 1993 Odessa Ministerial Declaration. It was signed by all coastal countries ministers of the environment in order to set the goals, priorities and timetable needed to bring about environmental actions including the decided actions to adopt. It was composed of 19 articles and the headlines were: Harmful substances, disposal of radioactive materials, pollution from ships transboundary movement of toxic wastes, natural resources, emergency response plans, assessment and monitoring, integrated coastal zone management, environmental impact assessment, and arrangements for future cooperation .

The Advanced level of the Odessa Declaration was Sofia Declaration and the contracting parties in Bucharest Convention committed declared their "joint political will towards joint action aiming at the further improvement of the Black Sea and the state of its marine and coastal ecosystems, by way, among other things, taking all appropriate measures to achieve good water status of all the water bodies in the region". The Environment ministers also declared their commitment to actively support the implementation of the Black Sea Ecosystems Recovery Project .

Black Sea Environment Programme-BSEP was launched in 1993 in order to make an early start to environmental action and to develop a longer-term action plan. It was founded by Global Environment Facility – GEF and completed now. The most important achievements of the BSEP were the Transboundary Diagnostic Analysis (TDA) and the Strategic Action Plan for the Rehabilitation and Protection of the Black Sea .

Strategic Action Plan for the Rehabilitation and Protection of the Black Sea was developed upon the principles of Bucharest Convention, Odessa Declaration, Rio Declaration and Agenda 21 and it also wellcomes the other international and national initiatives related with the Black Sea. The plan was composed of 88 articles under 6 headlines and an annex about the Recommendations to the Comission. The summary of the headlines were: the current situation. The basis for cooperative action and organization scheme. Policy actions including reduction of pollution, living resource management and sustainable human development. Preparing and implementing national Black Sea strategic action plans. Financement of the Action Plan and finally the arrangements for future cooperation.

The major problems that underline in the plan were:

- Inputs of certain pollutants, notably nutrients leading to eutrophication;
- Inputs of insufficiently treated sewage resulting in the presence of microbiological contaminants threatening the public health and posing a barrier to the development of sustainable tourism and aquaculture;
- Inputs of harmful substances and especially oil products;
- Introduction of exotic species;
- Inadequate resource management and use posing a serious risks of losing valuable habitats and landscape and ultimately, the biological diversity and productivity of the Black Sea ecosystem .



The Black Sea Memorandum of Understanding on Port State Control was signed in 2000 by six Black Sea states (Bulgaria, Georgia, Romania, Russian Federation, Turkey, and Ukraine) with the common understanding of main principles for Port State Control. The geographical scope of the Black Sea MOU region consists of ports located on Black Sea coastline. The purpose of establishing and maintaining an effective system of Port State Control is to ensure that, without discrimination as to flag, foreign merchant ships visiting the ports of its State comply with the standards laid down in the relevant international instruments .

The Global Environment Facility funded Black Sea Ecosystem Recovery Project aims to improve ecosystem health of the Black Sea by reducing inputs of nutrients and hazardous substances from landbased activities with a number of project partners, including the Black Sea Commission, UNDP, UNEP, WHO, and EU Tacis. The project has its own Project Implementation Unit . A Memorandum of Understanding has been signed between the Black Sea Commission and the International Commission on the Protection of the Danube River (ICPDR), and a joint task force known as the DABLAS Task Force has been established .

According to the fourth article of the Charter of the Organisation on the Black Sea Economic Cooperation (BSEC), member countries should cooperate with the aim of utilizing more effectively their human, natural and other resources for attaining a sustained growth of their national economies and the social well-being of their peoples. Members shall cooperate in a number of areas, including energy, transport, and environmental protection. But the organisation could not succeed to achieve its goals much because of the lack of enough cooperation and having much bureaucracy .

The Black Sea NGO Network activates on the side of civil society. It was established in 1998 and registered as a regional independent, non-political, non-profit association of NGO's from all Black Sea countries. Its mission is to contribute to the protection and the rehabilitation of the Black Sea through joining public efforts and involving all key stake holders .

The BSNN mission is to contribute to the protection of the Black Sea, including the Azuv Sea, and contribute to the sustainable development of the Black Sea countries through the increased participation of official, financial and civil society organizations .

Conclusions

Conclusively, environmental degradation is one of the most evident problem in nowadays world related to industrialism and globalization. It is clear that pollution does not recognize the national boundaries. If we have to speak for Black Sea Region, every country of this region is ambitious to become more developed, more industrialized, to get more output from agriculture or gain more income from tourism and other activities. Of course becoming more developed and willing to become more prosperous are nations natural rights. But when it is realised without control or indifference the result is simple: degradation of environmet and in connection with that degradation of life, consequently loss of all gains.



So, how do we cope with this challenge? The answer rests in international cooperation based on five main elements: to make aware of public opinion about the environmental danger, willingness to make a partnership, reciprocal reliance and respect, opportunities creation for regional cooperation and finally create positive and constructive relations between regional governments, civil society organizations and international institutions in the region.

Today, people does'nt seem interested in environmental issues because of their daily concerns. This must'nt be related to insensitivity but can be related to not to inform people well. So they will not act unless they know and feel the danger. Therefor, epistemic society must explain the current situation to the crowd of people with all its simplicity clearly. We must benefit from the power of media and environmentalist organizations more effectively to inform people and to warn governments. When people once concerned, governments will become eager to take responsibility, to start indivisual initiatives and to make international cooperation.

Following difficulties are: poor bilateral and multilateral relationships between the countries, instable administrations and weak economies. But regional states must be ensured that environment is not a subject that they can maintain their conflicts on and it must be assessed as a humanity responsibility and must be assessed above day by day changing conflicts. Once this understanding become established it will be easier to cooperate. In point of economics regional states must be supported because of lack of enough sources. After the dissipation of the Soviet Union some of the countries are in the period of reconstruction and suffering for involving to a new economic system. Therefor international community such as United Nations and European Union must continue to participate environmetal projects, to prop up the regional governments and to provide sufficient funds to recover the Black Sea. Finally all the initiatives must be coordinated from one center. Thus the urgent measures needed to be taken will be considered and put into effect more quickly and effectively in order to recover and protect the Black Sea



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RE-ITERATION OF THE MIDDLE EAST PEACE PIPELINE PROJECT

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The Peace Pipeline Project was first considered in 1986. A feasibility study for the project was completed in 1988. The project aimed to provide water through a pipeline to whole Arabian Peninsula except Yemen from Seyhan and Ceyhan rivers discharging into Mediterranean. The project proposal included two separate pipelines namely western and eastern (Gulf) pipelines. The capacity and length of the western pipeline were 3,5 million m³ and 2700 km respectively. This line was supposed to pass through Syria, Jordan to reach Saudi Arabia. The cost of water carried was estimated to be 0.85 USD for a total cost of 8 billion USD. The eastern pipeline was proposed to pass through Syria, Jordan to distribute water to Kuwait, Bahrain, Qatar, United Arab Emirates and Oman. The capacity and the length of the pipe were 2,5 million m³ and 3900 km respectively. The cost of water through the eastern pipeline was estimated to be 1,07 USD for a total cost of 12 billion USD.

This paper re-iterates cost of water carried by these two pipelines and the cost of desalination with current technologies in the world.

INTRODUCTION

Former Turkish President Turgut Ozal almost 20 years ago proposed a “peace pipeline” to sell surplus water from the Seyhan and Ceyhan rivers to parched countries on the Arabian Peninsula. Experts estimated that such a project would cost billions of dollars and take a decade to build. But the challenge to such a project or any other regional water-sharing arrangement would be getting nations that often have disputed to cooperate.

The project aimed to provide water through a pipeline to whole Arabian Peninsula except Yemen from Seyhan and Ceyhan rivers discharging into Mediterranean. The project proposal included two separate pipelines namely western and eastern (Gulf) pipelines. The capacity and length of the western pipeline were 3,5 million m³ and 2700 km respectively. This line was supposed to pass through Syria, Jordan to reach Saudi Arabia. The cost of water carried was estimated to be 0.85 USD for a total cost of 8 billion USD. The eastern pipeline was proposed to pass through Syria, Jordan to distribute water to Kuwait, Bahrain, Qatar, United Arab Emirates and Oman. The capacity and the length of the pipe were 2,5 million m³ and 3900 km respectively. The cost of water through the eastern pipeline was estimated to be 1,07 USD for a total cost of 12 billion USD.

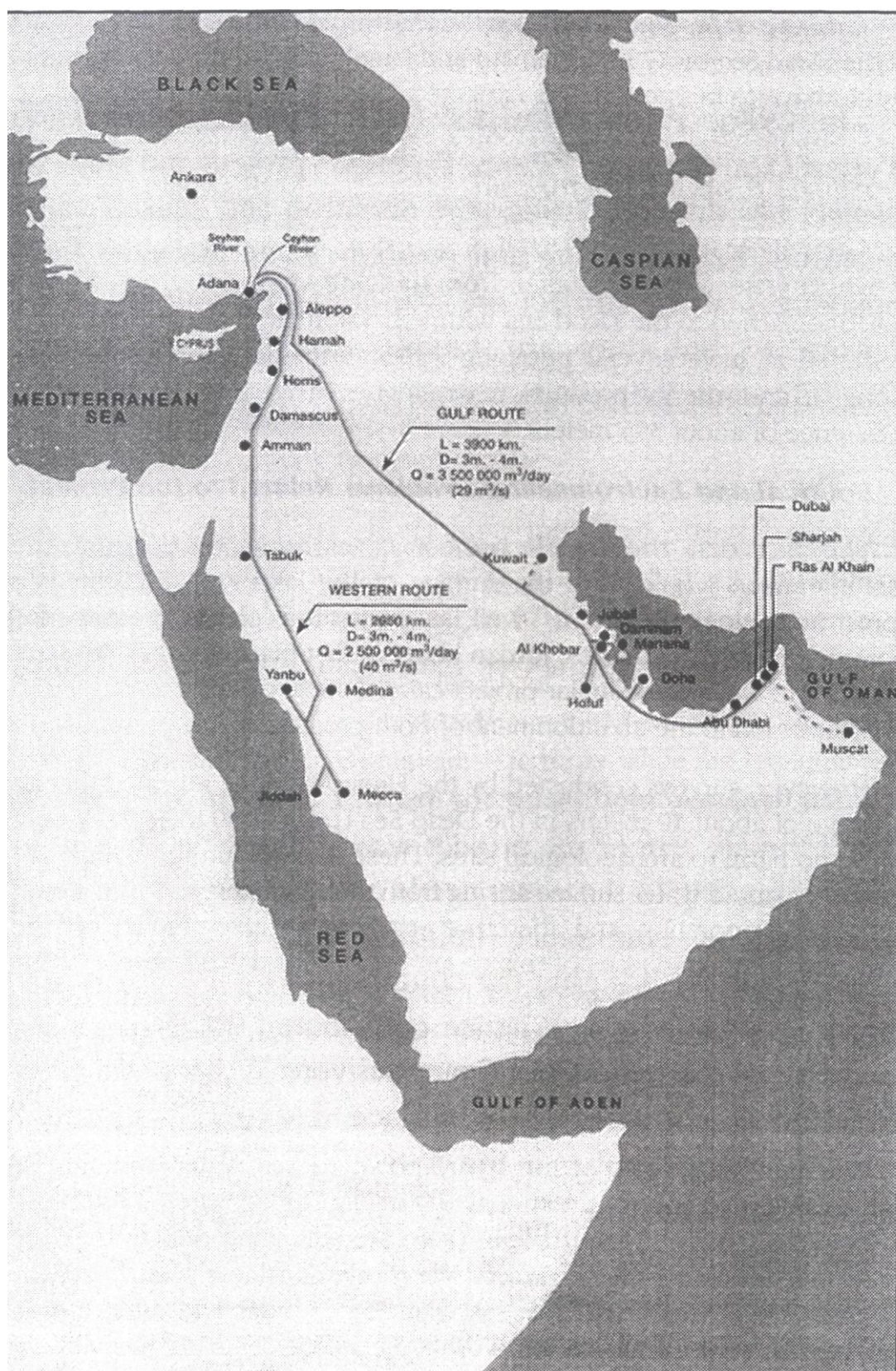


Fig. 1 Route map of the peace pipeline project.



SEAWATER DESALINATION

Distillation is one of mankind's earliest forms of separating fresh water from a salt-water solution. When salt water is boiled, the dissolved salt remains behind as the fresh water vapor is boiled away. In a distillation process, water is first boiled and then the steam, or water vapor, is cooled. This cooling condenses the steam into water again (See the Figure 2). Thus, distillation involves adding heat energy to salt water in order to vaporize the water and then removing the heat energy from the steam to condense it into fresh water.

In nature, this basic process is responsible for the hydrologic cycle. The sun causes water to evaporate from surface sources such as lakes, oceans, and streams. The water vapor eventually comes in contact with cooler air, where it re-condenses to form dew or rain. This process can be imitated artificially, and more rapidly than in nature, using alternative sources of heating and cooling.

When water is heated, its temperature increases until the boiling point is reached. While water is boiling, the steam and the boiling water are at the same temperature. However, raising water to its boiling point is not enough to cause it to boil. More heat must be added to change the water into steam. The amount of heat required to change water at its boiling point into steam at the same temperature is called heat of vaporization of water. The heat of vaporization is of major importance in distillation. The amount of heat required to vaporize water into steam is approximately five times greater than the heat needed to raise water from its freezing point to its boiling point (at ordinary sea-level atmospheric pressure water boils at 100°C).

Distillation is a two-step process involving both evaporation and condensation, heat must be added in one step and removed in the other. If these two steps were accomplished independently, the process would be inefficient and costly. In all the distillation processes, the steam is condensed by transferring heat from the steam to salt water as part of the heat source required to convert more water into steam. In this way some of the heat energy used in one step is recovered and used in the other step.

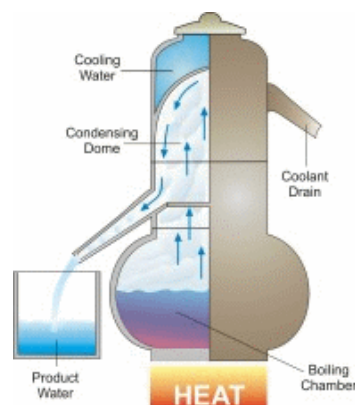


Fig. 2 Representation of a simple desalination unit.



SEA WATER

Sea water constitutes by far the biggest fraction (93%) of the water on earth. Though there are important local variations, it usually has a salt content of about 35,000 mg/l, or 3.5%, making it useless for consumption.

As most people know, there has also been a huge amount of Research and Development done with respect to removing the salt from seawater. This has gone far enough, and so many large desalination plants are in satisfactory operation worldwide that this may now be described as a mature industry. Global R&D is now organized and coordinated from the [Middle East Desalination Research Centre](#) in Oman.

Unit costs, even for the biggest and most efficient plants, approach or exceed \$1.00 per m³, so that the water produced can be used for only the highest- valued uses. The most important parameter in the cost equation is energy; when costs under \$1.00/m³ are reported it is usually because of an unusually low-priced energy source.

ENERGY REQUIREMENTS OF DESALINATION PROCESSES

It is theoretically possible to calculate the minimum work or energy needed for separation of pure water from brine. For the real process, however, the actual work required is likely to be many times the theoretically possible minimum. This is because the bulk of the work is required to keep the process going at a finite rate rather than to achieve the separation. The minimum work needed is equal to the difference in free energy between the incoming feed (i.e. seawater) and outgoing streams (i.e. product water and discharge brine). For the normal seawater (3.45 per cent salt) at a temperature of 25°C, for usual recoveries the minimum work has been calculated as equal to about 0.86 kWh m⁻³. This is equivalent to 3 kJ kg⁻¹.

There are no major technical obstacles to desalination as a means of providing an unlimited supply of fresh water, but the high energy requirements of this process pose a major challenge. The present day desalination plants use 5 to 26 times as much as this theoretical minimum depending on the type of process used. Clearly, it is necessary to make desalination processes as energy-efficient as possible through improvements in technology and economies of scale.

Desalination as currently practiced is driven almost entirely by the combustion of fossil fuels. These fuels are in finite supply; they also pollute the air and contribute to global climate change. The whole character of human society in the 20th century in terms of its history, economics and politics has been shaped by energy obtained mostly from oil. Almost all oil produced to date is what is called conventional oil, which can be made to flow freely from wells (i.e. excluding oil from tar sands and shale). Of this vast resource, about 1600 billion barrels have so far been discovered, and just over 800 billion barrels had been used by the end of 1997. It is estimated that there may be a further 400 billion barrels of conventional oil yet to be found. With current annual global consumption of oil being approximately 25 billion barrels, and rising at 2 per cent per annum, the "business as usual" scenario would suggest that the remaining oil will be exhausted by 2050.



Table 1. Cost comparison of different power technologies.

Power Technology	Installation Costs (US\$/kW)	O&M Costs (UScents/kWh)	Electricity Generation Costs (UScents/kWh)
Hydro	600-2,000	-	2-8
Wind	800-1,000	0.05-0.1	5-7
Solar - Photovoltaic (Modules, Crystalline Si)	3,700 3,900-4,500	-	-
Solar - Photovoltaic (Modules, Thin film amorphous Si)	2,600 3,000-5,000	-	-
Solar - Photovoltaic (Modules, Thin film CdTe, year 2000)	2,000	-	-
Solar - Photovoltaic (Modules, Thin film CIS, year 2000)	2,000	-	-
Solar - Photovoltaic(BOS)	4,300	-	-
Solar - Photovoltaic(system)	6,000-8,000 11,000-14,000	0	50-75
Solar - Thermal/parabolic Trough, 80 MW	2,800-3,500	-	12-17
Biomass - Direct Combustion	2,500	-	14
Biomass - Bio-crude combustion	1,500	-	8
Biomass - Advanced Technologies	400-2,500	-	6-10
Geothermal - Hydrothermal (Steam-dominated)	1,600-1,700	-	4-6,2-8
Geothermal - Hydrothermal (Water-dominated)	2,400-2,500	-	6,2-8
Geothermal - Geopressured (Steam)	-	-	11
Geothermal - Hot Dry Rock	-	-	4-19
Ocean - Tidal Barrage (8.6 GW, study)	1,800		8
Ocean (OTEC, estimate)	10,000	1	12-25
Nuclear (1,000 MW)	2,100-2,300		2-4
Gas - Combined Cycle	450-650	0.35	3-4
Coal - PFBC (100 MW)	1,200		5.4
Coal - Steam (2 x 500 MW, with flue gas treatment, LEC)	1,200-1,500	1.5-2.0	5-10

Source: ABB Environmental Affairs



The supply of oil will undoubtedly be boosted by an increase of supplies from unconventional sources, notably the tar sands and shale of Canada and the "Orinoco sludge" of Venezuela. This oil can only be extracted using high energy inputs, and at very high environmental costs. There will be strong political and international pressure against development of these resources, but, when world oil prices are high enough, production will inevitably increase. In theory, unconventional oil could stretch the world's oil supply by another 30 years. In practice, of course, the rate of consumption of oil will be heavily influenced by economic and many other factors, so that prediction in this area is very difficult. The political situation of two of the world's largest potential producers, Iran and Iraq, could be highly relevant to supplies as well as to the global political economy. It is clear, however, that one of the most important of the influencing factors will be the relative cost of renewable energy and how quickly the world can switch to sustainable technologies.

The operating cost for desalinators: the range of operating costs for brackish water desalinators is US\$ 0.22 - 0.65 per m³ of purified water. The range of operating costs for electric powered desalinators is US\$ 0.60 - 1.80 per m³ of fresh water. The range of operating costs for diesel powered desalinators is US\$ 0.43 - 1.20 per m³ of fresh water. The operating cost for solar powered desalinators is about US\$ 0.55 per m³ of fresh water which have small capacities. Naturally, larger, commercial models have lower operating costs than smaller, portable models. These operating costs are all-inclusive, and not just energy costs. They include energy, replacement membranes, filters, cleaning chemicals, operating and maintenance labor etc. Actual costs are likely to be less, for example, if you don't count your own labor.

CONCLUSION

Even though the Peace Pipeline project can be feasible technically, it lacks political support in the Middle East and from the Arabic countries. Due unstable political conditions and tension in the region the project may not be realized in the near future. Since the condition in Iraq gets worse by time this creates more complex atmosphere in the region. Additionally, the cost of a cubic meter of desalinated water gets cheaper than that of the Peace Pipeline project as the energy efficient desalination plants are designed. Desalination will not soon be the answer to the world water problem.

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A SURVEY ON UNDERSTANDING OF SOCIAL RESPONSIBILITY IN TURKISH SMALL AND MEDIUM SIZED INDUSTRIAL ENTERPRISES

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Social responsibility oriented behavior is a free-will behavior without expectation any profit against it. Although many countries have laws to force enterprises to make social responsibility oriented behavior, today's corporations consider us as organizations which act in behalf of public society. Although enterprises are objects of private property and work for making profit for their shareholders, they managed by professional administrators who believe that resources of enterprises must be useful for society. In this survey aimed to define a level at which enterprises were able to integrate point of view to the social responsibility oriented behavior and targets of enterprises with the social responsibility oriented behavior in Turkey, where are usually plenty of small and medium sized enterprises and where is continuing a transition period from traditional to professional management. Also there were tried to define borders of social responsibility oriented behavior by means of defying the important priority areas of enterprises according to the point of view of social responsibilities.

Key words: *social responsibility, small and medium sized enterprises, Turkey.*

1. Introduction

Nowadays modern enterprises have been quite powerful and effective. These enterprises, which supply support for millions of workers all over the world, provide a physiological protection and comfort as much as accommodation and safety. Managerial specialization of these enterprises is enjoyed and practiced by the other establishments. Company's managers take duty in universities, public and private organizations, and boards of management. They will be also appointed and elected for important governmental posts. These enterprises support with trade activities social organizations, charities, educational organizations and as mentioned below, will have different impacts on society.

The extension of social responsibilities of enterprises is quite controversial. Some peoples like to show a behavior of social responsibilities, but some of them do not have a positive opinion about it. A discussion intensifies around of its roles and functions in the modern society. There are disputed behaviors, performances and powers of enterprises in society. Do enterprises try to make efforts to society by different ways, even though there will be risk of profit reducing, when at the same time they act only for making profit in its full meaning?



2. Objectives, Scope and Method of the Survey

Social responsibility oriented behavior is a free-will behavior without expectation any profit against it. Although many countries have laws to force enterprises to make social responsibility oriented behavior, today's corporations consider us as organizations which act in behalf of public society. Although enterprises are objects of private property and work for making profit for their shareholders, they managed by professional administrators who believe that resources of enterprises must be useful for society. According to this opinion managers of corporations are in position of supervisor of society. Usage controls the large-scale resources which affect the society in the different forms. It is why that managers of enterprises sense responsibility when they use these resources.

There are quite differences in the approaching of corporations to the social activities. Some enterprises execute activities which required or forced by laws. They behave in accordance with social laws and regulations. Others can receive the social relations up to the certain level and ready for philanthropy charities so they behave according to the principles of social responsibility. And some of them are rather open to relations with social groups.

In this survey aimed to define a level at which enterprises were able to integrate point of view to the social responsibility oriented behavior and targets of enterprises with the social responsibility oriented behavior in Turkey, where are usually plenty of small and medium sized enterprises and where is continuing a transition period from traditional to professional management. Also there were tried to define borders of social responsibility oriented behavior by means of defying the important priority areas of enterprises according to the point of view of social responsibilities. By the means of questions related to the priority areas of enterprises like shareholders, workers, consumers, are researched corporation's efforts to the society.

This survey concerned to the social responsibility concept and problems in industrial relationships, was made in the enterprises which works in Izmir industrial region and around of it. From the point of poll application there was not made a differentiation between branches of industry. The poll application was executed in 100 enterprises where works 50 and less employees. There was requested to answered polls by means of face-to face interviews with high-rank managers or employers and all answers usually were given by administrators who took place in positions of general director, personnel manager, operating manager and administrative manager.

This research was realized by means of poll form, consisted from 10 questions, including company's identification. The poll separated into two important parts. First 5 questions directed to define areas of social responsibility and understanding by managers of enterprises the meanings of social responsibility concept. The second part included questions about employment security, wages, and educational programs.



In questionnaire there were given much considerations to the directly transfer all opinions about research subject. The opinion polling was made generally by means of face-to face negotiations. There were four type of questions in the questionnaire design. These are open pointed questions, ordering type questions, marking type questions and graduated questions. In addition to questions and answering choices took place in poll form, efforts were requested from administrators and managers and administrators, even not widely, made efforts to our works. Even there were paid much attention to the administrators of poll covering enterprises; some of them did not show interest to this opinion polling. Especially it was so difficulty to take answers about company's identification. So in this study all information related to identifications of enterprises was put aside.

3. Evaluation of Survey Results

According to the point of given questions, all answers were evaluated one by one, separately. The first question was "what administrators understand under the concept of the social responsibility". By these questions we have been cleared up how administrators understand the meanings of this concept and their knowledge about existence of term like this. The answers given to the questions are listed below:

- Increasing the level of education and living standards of employees.
- Increasing profitability and level of living standards of employees
- Increasing the level of living standards of employees
- Providing job security.
- Providing for consumers good of high quality, increasing the level of living standards of employees
- To be sensitive to environment, consumers and state, to make efforts to the society.
- Increasing productivity and profitability; to be sensitive to environment
- Increasing the level of living standards of employees
- To be sensitive to the health of employees and to provide employment security
- To create an employment.
- To be sensitive to the health of employees and protection of labor.
- To be sensitive to the health of employees and protection of labor
- Profitability and making efforts to the society
- To be sensitive to environment, consumers, employees and state.
- Increasing the level of education and living standards of employees
- Rendering services for consumers.
- Health of employees and protection of labor; to be sensitive to the environment and consumers.
- To be sensitive to the environment and employees.
- Responsibility of enterprises to the society, environment and nation.
- Responsibility of enterprises to the society and environment which was aside of profitability.
- Administrators of four enterprises declared that they have no idea and opinion about this subject.



According to these answers %30 of enterprise's administrators declared the increasing of education and living standards of employees and %20 of them declared on being sensitive to health of workers and protection of labor and providing of employment security. Only %15 of respondents has not any information in this subject.

2. Question: In this question administrators were asked to explain their opinions about the social responsibilities of enterprises. 40 of them answered that "first of all the social responsibility awareness of enterprises depends on public morale". 60 of them said that "the social responsibility awareness of enterprises depends on profitability and productivity more than on moral values like religion and morale". So among the factors pushing enterprises to the social responsibility oriented behavior can indicate "the profitability, productivity of the firm's and public morale".

3. Question: In this question administrators were asked to explain their opinions about execution of the social responsibilities. %80 of them answered that "when enterprises make not only economic purposes, but sets social responsibilities, they will realize own social responsibilities". %16 of them considered that "enterprises realize social responsibilities by means of execution of organizational purposes at good level". %4 of them gave reply that "enterprises realize the social responsibilities by effective performance and by the way of giving to society donations and relief in different type and other efforts".

4. Question: By this question administrators were asked to put in prior order all purposes which important for management of enterprises. Answers were as follows:

PURPOSES	PRIORITY in degrees				
	1	2	3	4	5
To increase profits continuously	40	16	16	16	12
To produce inexpensive goods and goods in quality.	20	36	16	12	12
To create in society a good image of company	32	12	24	16	12
To create a good working environments. for employees	4	24	40	36	4
To create an employment	4	12	4	20	60
Total	100	100	100	100	100

According to the above-mentioned table, 40% of administrators think that the first degree of social responsibility priority is continuously increasing of profits, 32% think that it is creating in society a good image of company, 20% is producing of qualities and inexpensive goods and 8% of them believe that it is creating a good working environment for employees. One administrator holds opinion about priority of all afore mentioned degrees.



5. Question: By this question administrators were asked to put in prior order all areas of responsibility which important for management of enterprises. Answers were as follows:

AREAS RESPONSIBILITY	OF	PRIORITY in degrees				
		1	2	3	4	5
Shareholders		32	16	16	8	28
Workers		16	36	28	12	8
Consumers		36	24	8	8	24
State		12	12	20	40	12
Environment		4	8	28	32	28
Total		100	100	100	100	100

According to the above-mentioned table, 36% of administrators think that the first degree of social responsibility areas are consumers, 32% shareholders (owners of shares), 16% workers, 12% state, 4% environment. Workers are included to the second and third degrees of social responsibility areas.

6. Question: In this question administrators were asked about the most reasons of workers dismissal. According to the answers to this question, 68% of administrators replayed that increasing of cost of labor force, technological changes and market narrowing are usually being reasons for dismissal. 30% of them noted that increasing of cost of labor force, technological changes and lack of education and lacking quality are being reasons for dismissal. Some of them marked indiscipline as reason for dismissal.

7. Question: Which measures were taken against to increasing of cost of labor force? According to the answers to this question 50% indicated that they increased productivity by means of technological changes and developing of skills of workers, 25% took measures in form of giving works to subcontractors and of technological changes, and 25% indicated that they increased productivity by means of developing of skills of workers and of giving works to subcontractors.

8. Question: By this question administrators were asked about principles of wages determination for workers and for administrative staff. Answers were as follows:

- For workers: 40% of enterprises determined wages according to the productivity, 30% in base of educational level, 30% according to the productivity, length of service, skills and education.
- For administrative staff: 12 % of enterprises determined wages according to the productivity, 44% according to the skills and education, and 32 % according to the productivity, skills and education.



9. Question: In this question were asked about in-service training programs and their duration. From enterprises which permanently execute in-service training programs, 68% are giving orientation training, 63% productivity training, and 50% training for adaptation to the new technologies, 45% training on skills improving, 41% training for protection of industrial and occupational accidents. Duration analyzes showed following length of time:

Orientation training:	- 5 days -3 month
Productivity training:	- 15 days – 6 month
Training for adaptation to the new technologies:	- 4 days – 3 month
Training on skills improving:	- 1 day – 3 month
Training for protection from industrial and occupational accidents:	- 2 day – 1 month.

10. Question: By this question administrators were asked about organizations with whom they cooperated for in-service training. 16 % of administrators answered that they cooperated with training divisions established within enterprises and with private organizations, 12 % with training divisions established within enterprises, 8% with training divisions established within enterprises and with National Productivity Center, 8% with training divisions established within enterprises and public organizations, 12 % answered that they have no contact with any organizations. By considering all results together, we see that 82% of enterprises are giving education by means of training divisions established within it.

4. Conclusion

Evaluation of pooling is making easier to take results and conclusion. Really the polling of 100 enterprises gives clues of understanding by the industrial enterprises of concept of social responsibility.

The survey showed that 40% enterprises declared it depends on “public morale” and 60% of them said that “the social responsibility awareness of enterprises depends on profitability and productivity of the firms”. So among the factors pushing enterprises to the social responsibility oriented behavior can indicate “the profitability, productivity of the firms and public morale”. First of all it impresses the social responsibility activities, fruitful working of enterprises and its ability to take profit. An enterprise which couldn’t solve own structural and economical problems, can not to execute functions of social responsibility. Answers to the question about understanding of concept of social responsibility, support this conclusion. As a matter of fact 40 enterprises of 100 declared that “increasing profits continuously” is the first degree for them.

Identification and explanation of the concept of social responsibility given by enterprises, accents on areas for which enterprises take responsibility and does not meet the thesis “enterprises must have in society where they located a part of solving of different social problems arisen by them or aside of them”. Nevertheless all descriptions showed that enterprises have “limited knowledge” about social responsibility.

In all definitions about social responsibility given by managers presents a common element as “responsibility against employee”. Managers as answer to the question about concept on social responsibility use definition like “to be sensitive in subject of increasing the level of education and living standards of employees and creation of employment”. There was determined that 60% of 100 enterprises had opinion like above-stated.



This conclusion related to the concept of social responsibility has difference with conclusion on priority areas of social responsibilities of enterprises and with conclusion on priority purposes of enterprises for management. Among priority purposes for managers the purpose of creation of employment put in to last place. 60 enterprises of 100 considered a creation of employment as 5th degree of priority, 20 enterprises as 4th degree, only 4 enterprises considered as the first degree purpose. Enterprises considered own responsibility against employees as 2nd and 3rd degree of responsibility. This is not suitable to afore mentioned thesis of managers related to the understanding of the meaning of social responsibility concept. Also this situation showed that activities managers are contradicting with their opinions on social responsibility concept. Nevertheless enterprises considered as first degree responsibility areas by order consumers, then shareholders, employees, state and environment.

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IMPACT OF DECOMMISSIONING OF NUCLEAR FACILITIES ON AFRICAN COUNTRIES.

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Africa is the world's second largest and the most populated continent after Asia, it has a total population of approximately 800 million people. It comprises of 54 sovereign nations and some few colonies mostly islands.

Apart from Nigeria, South Africa, Egypt, Libya, Morocco, Tunisia and Algeria, all the other remaining African countries are extremely poor and unviable. As a result of this, Africa has been experiencing a lot of civil unrest since the 1960s when most of the African countries gained their independence from their former colonial masters, the civil unrest in countries like Angola, Democratic Republic of Congo, Sudan, Burundi, Rwanda, Mozambique, Liberia, Sierra Leon and recently in Cote D'Ivoire, are good examples. In addition to abject poverty of less than 1\$ per person per day makes trafficking in drugs, arms, humans and weaponry trade on the continent becomes much more rampant.

Today the continent is experiencing the coming of a new evil deal called "**Trade in radioactive waste**"; which involves the transporting of radioactive wastes from the developed countries to it's waste bin in Africa, where it is unsafely buried after collecting millions of dollars from It's original owners. Recent statistics have revealed that most of the people involved in the evil businesses of trafficking in drugs, human, arms and trading in weaponry, are diverting in to the so called new evil business of "Trade in Radioactive waste" because this new evil business financially exceeds the rest of the above listed evil businesses.

POSITION OF AFRICAN GOVERNMENTS ON THE RADIOACTIVE WASTE TRFFICKING.

Apart from the government of the federal republic of Nigeria, that has made great fuss about wastes burial in its land and further contributed to the issuance of a resolution by the African Union (AU). All the other governments of the other African countries have shown no sings of fighting this evil business of "Trade in the radioactive waste" in their lands, some governments were silent on the issue and others even sign treaties, contracts or received offers to approve the burial of toxic wastes in their lands. For example the government of the federal republic of Benin, was accused by its citizens of legalizing the dumping of radioactive wastes in its land in the 1970s under the military junta led by General Mathieu Kerekou, as a result of severe balance of payment deficit that lead to the non payment of workers salaries and the defaulting in the payment of it's external debts. However the situation lead to the dumping of millions of tons of radioactive wastes between 1984 and 1986 by some industrialized nations, in the republic of Benin. Another example of a country that was accused of legalizing this evil business is Mauritania, where the Al- Ahdath newspaper of Morocco in 1988, reported the



“Mauritanian – Israeli” agreement on wastes burial, leading to the burial of thousands of tons of toxic wastes in Mauritania.

In addition there were also many other unsuccessful dumping of these radioactive wastes in Africa, example of these are that of the koko port, in Nigeria, in 1988 where an Italian company was forced to evacuate its wastes earlier dumped at the koko port, in the present day Delta state of Nigeria. The hazardous waste exposed by the Tsunami disaster in December 2004 at the coast of Somalia also proves the presence of the radioactive wastes trafficking business in Africa. Finally the recent toxic waste dumping in Nigeria, by some importers of chemicals who are still at large by the Nigerian government, which claimed the lives of some villagers in Oyo state of Nigeria in May 2005, all these together indicates the growing of the business at a alarming rate.

POSITION OF NON-GOVERNMENTAL ORGANISATIONS (NGOS) ON THE RADIOACTIVE WASTES TRAFFICKING.

As a matter of fact apart from Nigeria that is fighting this evil business both directly and indirectly, the NGOs are the only remaining bodies that are helping towards the fighting of this evil business and on the safe handling of the radioactive waste in this part of the world. For example the International Parliamentary Union helped in organizing and supervising a conference titled “Health is the Basis of Development in Africa” which was held in the Congolese capital, Brazzaville in 1990 where the issue of industrial toxic wastes disposal in Africa, was debated at a highly academic standard. Another conference was also organized by the NGOs on “Nuclear Pollution” in the Ghanaian Capital, Accra, in 1993. In fact the NGO’s are trying, but more is still expected from them in order to educate people on the safe handling of the radioactive waste especially at disposal and to conquer this evil business of ‘Trade in radioactive waste’ moving with a supersonic speed in this part of the world.

POTENTIAL SOURCES OF NUCLEAR AND RADIOACTIVE WASTES IN AFRICA.

The African continent is underdeveloped and also considered to be unviable. So there is no significant generation of radioactive wastes from the industries. However, the existence of Uranium Mines in countries like Niger Republique and The Democratic republic of Congo proves that the continent also generates some radioactive wastes to some level.

Niger is the fourth largest Uranium producer in the world; it produces 11% of the total world supply from mines while the Democratic Republic of Congo is the seventh largest producer with 7% of the total World supply.

Apart from the natural sources of generating radioactivity, the presence of Nuclear plants in Zimbabwe and in South Africa for the generation of electricity are also potential sources of generating nuclear and radioactive wastes. Other industrial sources include the pharmaceutical and the petroleum companies operating in countries like Nigeria, Egypt, Zimbabwe, South Africa, Morocco and some few others.



However since it is now confirmed that there are millions of tons of nuclear and other radioactive waste disposed in Africa, shows that the wastes are been imported into the continent from the other parts of the world with very many nuclear plants, probably as a result of the decommissioning of such plants.

Nevertheless in an interview conducted in the republic of Benin among the former military personnel indicates that most of the wastes imported were from the former Soviet Union, while the interview conducted among University students in the republic of Nigeria, shows that most of the wastes imported into Nigeria, were from Italy and in another interview conducted among some sampled individuals in the republic of Sao Tome and Principe indicates that most of the wastes dumped in the island nation were from the North America and Europe.

The above result from different interviews reflect different places of origins for the various wastes, but what is common to all is the fact that they are all imported from the developed nations and they are mostly solid wastes in form of industrial components like and some liquid wastes in drums.

THE PEOPLE OF AFRICA AND THE RADIOACTIVE WASTES TRAFFICKING.

Recent research indicates that about 81% of the inhabitants of the African continent, do not know anything about radioactivity and radioactive wastes. In fact even the inhabitants living around the Uranium mines of “Arlit” which is one of the world’s major uranium mines, in the Niger Republique, do not know what a Uranium is, not to talk about its radioactivity.

As a result of this ignorance about radioactivity by the people of this Continent coupled with the rapidly growing trafficking and unsafe handling of this radioactive wastes by some few individuals, led to the out-break and the subsequence spreading of so many types of Cancerous tumours, the contamination of some farm lands rendering them uncultivable and the extinction of so many types of sea animals and sea foods e.g. The rapid decline of sea foods around the Somalia’s territorial waters, the Gulf of Guinea and the situation in the Dollos Islands along the coast of Guinea-Bissau near the capital Bissau, are all good examples.

RECOMMENDATION

After identifying the presence of this evil business of radioactive waste trafficking on the African continent, I came up with the following suggestions/recommendations: -

1. There should be incessant, adequate and mass public enlightenment on the dangers of effects and the unsafe handling of radioactive materials (waste), by both the International Atomic Energy Agency (IAEA) in collaboration with the Governments of Africa and the Non governmental Organizations through sponsoring and Organizing conferences and seminars from time to time.



2.The International Atomic Energy Agency should use its capacity to be able to influence the African Union (AU) and other African regional bodies to pass a resolution banning this evil business of trafficking of radioactive wastes in this part of the World.

3.The International Atomic Energy Agency should send team of researchers to come and investigate this trend of radioactivity within the African continent and proffer possible lasting solutions in checking the menace.

4. The International Atomic Energy Agency, should be making a closer monitoring of the activities of the nuclear plants existing in countries like South Africa, Zimbabwe, Egypt and other countries with nuclear plants in Africa, in order to avoid the problem of illegal dumping of their radioactive wastes.

ANALYSIS AND CONCLUSION

We cited at the importation, subsequence and illegal disposal of radioactive wastes in Africa, in relation to the role of the individuals, the governments and the non-governmental organizations. Although because of the influence of high rate of poverty coupled with the underdevelopment of the continent resulted to the high traffic and illegal disposal of radioactive wastes in the continent, but yet the Nigerian government and the Non-governmental Organizations (NGO) are trying on their own capacity towards combating this evil business.

Despite the single handed effort by Nigeria and the educative conferences organized by the NGO's towards combating this menace, the presence and the increasing cases of Cancerous tumours, the continuous contamination of cultivable lands, the rapid decline in sea foods and the continuous exposures of hazardous waste as a result of natural disasters like earthquakes and floods in the continent, shows that the problems emanating from the trafficking of nuclear and radioactive wastes keeps on increasing.

It was in view of these increasing problems, I came up with the above listed suggestions/recommendations with the hope that if these suggestions/recommendations are implemented and adopted, it will help in reducing health hazards and loss of lives through the trafficking of these nuclear and radioactive wastes in this part of the World, other wise the problem will ever remain on the increase.



INTERNATIONAL RELATIONS AND ENVIRONMENTAL ISSUES

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Recent years have seen an appreciable growth in the level of understanding of the dangers facing the International Environment⁴ and an extensive range of Environment problems is now the subject of serious International concern⁵. In the twentieth century, nation-states have enacted a host of new treaties and conventions directed at protecting natural resources and the environment. *The Convention on Environmental Impact Assessment in a Transboundary Context 1991* calls for the “establishment of an environmental impact assessment procedure that permits public participation in certain circumstances. *Sophia Protocol* was adopted in 1988 and concerned the control of emissions of nitrogen oxides or their Transboundary fluxes. The major problem posed for international law lies in the state oriented nature of the discipline. Traditionally, a state would only be responsible in the international legal sense for the damage caused where it could be clearly demonstrated that this resulted from its own lawful activity. But the international community has slowly been moving away from the classic state responsibility approach to damage caused towards a regime of international cooperation. In the international sphere only nations are bound by the treaties and conventions.

Main Paper

Environment can be defined as “the entire range of external influence acting on an organism, both physical and biological i.e other organism, forces of nature surrounding on individual”¹. Scientific and Industrial development that has taken place in the last few decades has been so spectacular that it has affected the presence of those constituents which are regarded essential for the well being of human life . Capability of the human beings to change the course of nature to their benefits has greatly influenced the environment which implies physiography² and natural forests.

Changes in the physical, chemical and biological conditions in the environment causes pollution of the environment .It has been rightly observed that pollution in common parlance means the introduction by man into any part of the environment of waste matter or surplus energy or any other hazardous things which changes the environment and thereby directly or indirectly affect the opportunity of men to use or enjoy in the manner they like³.

Recent years have seen an appreciable growth in the level of understanding of the dangers facing the International Environment⁴ and an extensive range of Environment problems is now the subject of serious International concern⁵. International nature of environmental pollution, both with regard to its creation and the damage caused in developed countries as well as developing countries, is now accepted as requiring an international response.



The major problem posed for international law lies in the state oriented nature of the discipline. Traditionally, a state would only be responsible in the international legal sense for the damage caused where it could be clearly demonstrated that this resulted from its own lawful activity. But the international community has slowly been moving away from the classic state responsibility approach to damage caused towards a regime of international cooperation. In the international sphere only nations are bound by the treaties and conventions.

In the twentieth century, nation-states have enacted a host of new treaties and conventions directed at protecting natural resources and the environment. In 1920, the estimated total number of environmental treaties was only eight. This grew to about 20 by 1940 and then dramatically expanded to about 100 by 1970. In 2000, the cumulative number of environmental treaties, bi-lateral, regional, multilateral, from conservation, resource-based issues (such as ocean reservation) to ecological issues (such as biological diversity and global warming) nations have steadily agreed to collaborate and enact a wide range of rules and agreements to protect the environment. Understanding the motives of state international cooperative behavior is an especially complex problem to resolve because the “remote” international arena displays much weaker sets of norms and sanctions than the domestic arena or regional-level interactions.

Various conventions and resolutions have been adopted by the United Nations General Assembly concerning the environment⁶.

This has been provided for protection of the environment for the developed countries as well as the developing countries. The UN Environment Programme was established which has proved to be a particularly important organization in the evolution of convention, treaties and other instruments in the field of environment protection especially in the developing countries. This has been responsible for the development of number of initiatives, including the **1985 Vienna Convention** for the protection of Ozone Layer and the **1987 Montreal Protocol** and the **1992 Convention of Biodiversity**. An International agency Committee on Sustainable Development was set up in 1992 to improve cooperation between the various bodies concerned with Environment. In 1994 it was agreed to transform the Global Environment facility by the UN Commission on Sustainable Development from a three year pilot programme into a permanent financial mechanism to award grants and concessional funds to developing countries for a global environmental protection projects. There has been growing awareness of the close relationship between the environment pollution and the developing countries. It has been broadly recognized that developing countries and the underdeveloped countries are more likely to suffer the consequences of Environmental pollution than the developed countries on both the national and international levels. Internationally less developed countries tend to have more severe environmental problems. For example Hazardous wastes are treated less efficiently and less safely in Eastern Europe and Africa than in Western Europe and Canada. In 1992 at the Earth Summit in Rio De Janeiro discussions prevailed as to provide better financial resources to the developing countries so as to implement better environment protection policies.



The Convention on Environmental Impact Assessment in a Transboundary Context 1991 calls for the “establishment of an environmental impact assessment procedure that permits public participation in certain circumstances .In 1980 in General Assembly in its Development Strategy for the decade has said that in developing countries rapid development will enhance their capacity for improving the environment .

AIR POLLUTION AND PROTECTION OF THE ENVIRONMENT

Perhaps the earliest perceived form of pollution relates to pollution of the air. The burning of fossils fuels releases into the atmosphere sulphur –dioxide and nitrogen oxides which changes into acids and carried by natural elements and fall as rain or snow or solid particles. Such acids have the effect of killing living creatures in lakes and streams and of damaging soils and forests.

In 1979 , on the initiatives of the Scandinavian countries and under the auspices of the UN Economic Commission for Europe , *the Geneva Convention on Long Range Transboundary Air Pollution*¹⁰ was signed¹¹.The obligations undertaken within this respect are that the States shall endeavor to limit and as far as possible ,gradually reduce and prevent air pollution .Within this respect if the Developing countries come forward and become parties to it this would go a long way in protection of their environment from the north states which cause environmental pollution. Also the *Sophia Protocol* was adopted in 1988 and concerned the control of emissions of nitrogen oxides or their Transboundary fluxes. *In 2001, the Stockholm Convention* on Persistent Organic Pollutants was signed. The Convention provides for the control of production, trade in, disposal and the use of 12 named persistent organic pollutants.

OZONE DEPLETION AND GLOBAL WARMING

During the 1980's ,the international environmental efforts shifted from transboundary or regional air pollution concerns , such as discussed above like acid rain , to threats to the global atmosphere . This shift was prompted by scientific evidence that emerged in the mid 70's .The evidence linked the release of CFC's and other chlorine –based substance with the destruction of the stratospheric ozone layer .The problems of global warming and the expected increase in the temperature of the Earth in the decades to come has focused the attention on the issues particularly of the consumption of fossil fuels and deforestation. To reduce the use of these substances, and protect the global atmosphere, the *1985 Vienna Convention for the Protection of the Ozone Layer and The Montreal Protocol on Substances that Deplete the Ozone Layer* were adopted. Under the Vienna Convention the contracting parties agree to take appropriate measures to protect human health and environment against adverse effects resulting from human activities which modify the ozone layer.

The 1987 Montreal Protocol on Substances that Deplete The Ozone Layer sets firm targets for reducing the consumption and production of range of ozone depleting substances .The Standards set forth in 1987 protocol was strengthened and expanded to cover additional ozone –depleting substances, through amendments adopted in 1990,1992,1994.One of the major innovations of this protocol is its recognition that all nations should not treated equally as certain countries have contributed greatly to ozone depletion while other countries have made very small contributions .



The protocol also contains provisions to deal with the problems of the few nations that have not signed the Protocol and continue to produce and consume ozone –depleting substances , by banning trade in these substances with non-member states. The 1990 amendments made specific reference to the requirement to take into account the developmental needs of the developing countries and the need for the transfer of alternative technologies.

The developing countries share in release of CFCs is 5% where as that of developed countries is 95%. Atmospheric monitoring of ozone-depleting substance levels provides an indication of compliance of the global community to the regulations set forth by the Montreal Protocol and its amendments, and on the effectiveness of the phase-out limits defined by the treaty.

The measure of compliance and effectiveness of the treaty was indicated in a report by researchers at the NOAA in 1993, in which they reported a decrease in the growth rates of atmospheric CFC-11 and CFC-12 levels. This slowdown in the growth rate was directly attributed to the policy regulations set forth by the Montreal Protocol. More recently, scientists have found that atmospheric levels of another ozone-depleting substance, methyl chloroform, have decreased since 1991. This is the first instance that a substance regulated by the Montreal Protocol has been found to be decreasing, lending more credibility to the effectiveness of the provisions set forth in the protocol.

It may be noted that in September 1991, delegates from 116 countries the ten day warming at Nairobi with a view to enter into an international pact to slow global warming by controlling man made emissions of carbon dioxide which trap heat, and are believed to be the main cause for gradual warming of the earths atmosphere .America which is the world's biggest emitter refused to set a specific target on reducing the emissions¹².

CLIMATE CHANGE CONVENTION (U.N Framework Convention on Climate Change 1992)

The effect of the global warming and the depletion of the Ozone layer were so alarming and disastrous that the General Assembly resolved on Dec 6 1988 that the climate change was a common concern of mankind and decided that the international action was needed to deal with the problem¹³.The climate change Convention was prompted by several scientific studies in the late 1980's which indicated that increased levels of carbon dioxide in the atmosphere were causing global temperature to rise .

The climate change Convention was adopted to reduce the amount of Carbon dioxide emitted into the atmosphere ,and to preserve and increase the earth's carbon absorption capacities . Also the objective of the Convention is to achieve stabilization of greenhouse gases in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system and such level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure food production is not threatened and to enable economic development to proceed in a sustainable manner.¹⁴ The Convention provided that the developed countries shall take all measures to return their carbon-di-oxide or other green –houses gases emissions to 1990 levels .



Developed countries are required to submit information on how they plan to meet the obligations. The parties agree to give full considerations to actions necessary to assist developing parties that may be prone to natural disasters, drought and desertification and land locked and transit states.¹⁵ The Climate Change treaty was agreed by the Inter-Governmental Negotiating Committee for a Framework Convention on Climate Change which was established in 1990 as a subsidiary body of UN General Assembly ***Kyoto Protocol 1997***.

In December 1997 the Parties to the framework Convention on Climate Change met in Kyoto, Japan. After much negotiations the parties signed the Kyoto Protocol, which limits the developed country parties to individual, legally binding targets to limit or reduce their green house gas emissions. Developing countries are obliged to simply to meet existing commitments as Developing nations rejected taking on any new commitments and only agreed at the last minute to allow emissions trading among all countries as part of a 'clean development mechanism'.

Countries like China and India seem to be prepared to resist emissions trading schemes because they want developed nations to bear the major costs of global carbon reductions even though reductions may be achieved in energy –inefficient developing countries at much lower cost than in energy efficient developed countries.

OUTER SPACES

One of the developments in this field is the ***Outer Space Treaty, 1967*** which provides for the fact that the exploration and use of outer space such be carried out for the benefit of all the states. Within this respect the harmful contamination of the space is to be avoided, as are adverse changes in the environment of the earth resulting from introduction of extraterrestrial matter. There is a particular growing problem with regard to debris located in outer space. Such debris, consisting of millions of objects of varying size in space constitutes a major hazard to spacecraft. The specific problem of space debris¹⁶ has been addressed in the ***Buenos Aires International Instrument on the Protection of the Environment form Damage Caused by space debris***. This emphasizes the obligations to cooperate in the prevention of damage to the environment and to hold deliberations and consultations where there is a reason to believe that activities may cause the production of space debris which may in turn result in the pollution of the environment.



MARINE POLLUTION

Marine pollution can arise from a variety of sources, including the operation of sea, dumping at sea¹⁷, the effects of pollution originating on land and entering in the seas. The various conventions within this regard include *The International Convention for the Prevention of Pollution of Sea by oil, 1954* which prohibits the discharge of oil within 50 miles of land and this has been outmoded by the Prevention of pollution from ships 1973¹⁸ which basically looks after the various non-accidental pollution from ships apart from dumping. There is the *Convention Relating to Intervention on the High Seas in cases of Oil pollution Casualties, 1969*, which permits state parties to take such measures on the high seas as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interest from pollution or threat of pollution of the sea by oil. The text of a *Convention on the Prevention of Marine Pollution by Dumping of Wastes and other matter* was adopted and came into force on 30 Aug 1975. The Convention binds State parties individually and collectively to promote the effective control of all sources of pollution of marine environment. Convention on Establishment of an International Fund for Compensation for oil pollution damage was adopted in 1971. Further the *1982 United Nations Conventions on the Law of the Sea (UNCLOS)* establishes several duties for the marine environment. UNCLOS obligations include the duty of state to protect and preserve the marine environment, take individually or jointly as appropriate, all measures that are necessary to prevent, reduce and control pollution of the marine environment from any source, also take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to damage the environment by pollution. A major legacy of the Law of the Sea treaty is the assertion by the so called group of 77 developing nations that are deep seabed, and minerals contained there, are the “common heritage of mankind” The Convention on The Law of Sea, defines pollution of the marine environment “as the introduction by man, directly or indirectly, of substance or energy into the marine environment which results or is likely to result in deleterious results.

INTERNATIONAL WATERCOURSES

International water courses are systems of surface waters and ground waters which are situated in more than one state¹⁹. Such watercourses flow into a common terminus. Customary law has developed rules with regard to equal riparian rights to international rivers²⁰. It was proposed by the *Helnski rules on the uses of the waters of International Rivers in 1996* in which it was noted that each basin state was entitled to a reasonable and equitable share in the beneficial use of the waters and that all the states were obliged to prevent new forms of water pollution that would cause substantial injury in the territory of other basin states.²¹

The Convention on the Law of the Non-Navigational Uses of International Watercourses, 1997 provides that watercourse states shall in their respective territories utilize an international water course in an “equitable and reasonable manner”. In particular, optimal utilization must be consistent with adequate protection of the watercourse. Within this purview it has been contended that watercourse states shall protect and preserve the ecosystem of international watercourse²² and shall act to prevent, reduce and control pollution of an international watercourse and that may cause significant harm to other watercourse states or to their environment.



From this we can definitely conclude that the international community is coming to terms with the need to protect the environment of international watercourse. ***The 1992 Convention on the Protection and Use of Transboundary water course and International lakes*** provides that state parties should take all steps and be guided by the Precautionary Principle and the Polluter Pays Principle, by which the costs of pollution prevention and control and reduction measures are to be borne by the polluter. The parties are to take emission limits for discharge from point source into surface waters best on best available technology. The measures to be taken must ensure, for example, the application of low and non-waste technology, prior licensing of waste –water discharge, the application of biological or equivalent processes to municipal waste-water.

HAZARDOUS WASTES

The Basal Convention on the Control of Transboundary movements of Hazardous wastes was concluded on March 22 1989. Within this convention there is applicability of 45 wastes that are presumed to be hazardous wastes. The convention provides for the minimization of generation of hazardous wastes in terms of quality or hazard potential , promotion of disposal of hazardous wastes and other wastes ,as close as possible to their source of generation. and also to reduce transboundary movements of hazardous wastes.

Most responsible businesses, the kind whose participation is desired, still perceive the Basel Convention as concerned with unilateral private (i.e. non-governmental) dumping of hazardous waste in developing countries. This was, in fact, the reasoning and motivation for the creation of the Convention. Such businesses concur that dumping of waste in developing countries is wrong, and they simply declare that they never have and never will engage in such conduct. They are thus not threatened, or do not perceive themselves as threatened, by any actions that the Basel Convention might take, including the trade ban.

The focus is upon the significant or exceptional risk of transnational damage. Also within the perspective of international law the state under whose territory or jurisdiction the activity took place would be liable irrespective of the fault. The increasing problem of the disposal of toxic and hazardous wastes and the practice of dumping with its attendant health risk has, prompted international action. ***The Oslo Convention for the Prevention of Marine Pollution by dumping from ships and Aircraft 1972²³*** provides for a ban on the dumping of some substances .In 1988 , the organization of African Unity adopted a resolution proclaiming the dumping of nuclear and industrial wastes in Africa to be a crime against Africa and its people. ***The Convention on the Transboundary Effects of Industrial Accidents adopted in 1992*** applies to industrial accidents in an installation or during transportation .Parties are to develop policies on the sitting of new hazardous activities and on significant modifications to existing hazardous activities.



CONVENTION ON BIOLOGICAL DIVERSITY

Convention on Biological Diversity was opened for signature in June 1992 at the United Nations Conference on Environment and Development (UNCED), the Convention entered into force in December 1993. The treaty is a landmark in terms of reconciling environment and development as it couples environmental objectives to the need for development in developing countries. Biological diversity means the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part; that includes diversity within species, between species and of ecosystems. While recognizing that the conservation of biodiversity is a "common concern" of humankind, it emphasizes the fact that natural resources are the property of individual countries.

It ties this right to a national responsibility for environmental conservation, placing most decision-making at the national level. The objectives of the adoption of the Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

This convention provides for the adoption of national regulations to conserve biological resources imposition of legal responsibilities on countries for the environmental impacts of their private companies in other countries.

CONCLUSION

HUMAN RIGHTS, INDIGENOUS PEOPLE AND THE ENVIRONMENT

Polluted environment affects directly to the health- mental as well as physical, of human beings ,and therefore ,it is human being alone whose survival has become difficult due to change in physical ,chemical and biological conditions of the environment .Discharge of effluents into the atmosphere ,oil ,spills ,dumping of refuse ,acid rains and noise are some of the instances of pollution that has considerably affected the quality of human life. They have a direct impact on a number of economic, social, and cultural and civil and political rights. Polluted environment is bound to reduce the efficiency of work.

Dangerous levels of pollution in water ,air, earth and living beings ;major and undesirable disturbances to the ecological balance of the biosphere ;destruction and depletion of irreplaceable resources and gross deficiencies harmful to the physical ,mental and social health of men, in the man made environment ,particularly in the living , the working environment have affected the human rights. Although environmental protection and human rights are often treated as separate legal topics, there are many situations where the two overlap .First many governments and international bodies have recognized the right of citizens to live in a clean and healthful environment .Second, environmental and natural resource policies may disproportionately affect the poor and minority communities.

The rights of indigenous people are crossover issue in that they may be protected under both international human rights law and international environmental law.

The rights of indigenous people may be seen in two basic rights (1) the right to protect and manage natural resources located on traditional indigenous lands. (2) the right of citizens to live in a healthful environment.



With respect to the protection of indigenous people as a means to conserve biodiversity, international environmental law can play an important role. Many native and indigenous people have opposed government policies that permit resource exploitation on traditional lands. Because this exploitation threatens to undermine the economic and spiritual fabric of their cultures, and often results in forced migration and resettlement, the struggle to protect the environment is often a part of the struggle to protect the cultures of indigenous people.

A human being cannot maintain his dignity and honour in their absence. The importance of safe and adequate environment is so significant for maintaining the human dignity that it has been rightly characterized as a human right. While the human rights derive from the inherent dignity of human person. Environmental law lays down the means by which human dignity may be maintained. It is rather impossible for a human being to preserve its dignity in a polluted environment. Environment therefore has to be conserved in order to maintain and improve quality of mental and physical health. A human being living in a polluted environment cannot imagine of his physical as well as mental health and happiness.

The importance of safe and adequate human environment was stressed in Stockholm Conference of 1972 when the Declaration adopted in the Conference proclaimed that both aspects of man's environment, the natural and the man-made, are essential to his well being and to the enjoyment of basic human rights even the right to life itself. Earth Summit at Rio de Janeiro has also recognized that all human rights are entitled to a health and protective life in harmony with nature.

It is also to be noted that uncontrolled or unplanned activities of man have been causing environmental deterioration. Deforestation; soil; water degradation and desertification are reaching in an alarming proportion and are seriously endangering the living conditions. Changes in the atmosphere such as those in the Ozone layer and acid-rain pollution of the seas and inland waters constitute grave threats to the human environment. There is a close relationship between human rights and environment. Safe and adequate environment is one of the means by which human rights can be protected and promoted.

The Rio Declaration on Environment and development

Out of the Earth Summit in 1992, three documents emerged, one of which was the Rio Declaration on Environment and Development. In principle 22 the Declaration states that indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices, culture and interests and enable their effective participation. The same principle is echoed in the Bio-diversity Convention in Article 8(j). The combination of human rights and environmental obligations can provide a powerful tool to protect land and ecosystems where indigenous people live. As the conservation expertise of indigenous peoples become more widely acknowledged, indigenous rights are likely to play an increased role in national and international environmental protection efforts.



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ENVIRONMENTAL ASPECTS OF THE EUROPEAN UNION NEIGHBOURHOOD POLICY FOR UKRAINE

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This paper analyzes ecological aspects of new European Neighbourhood Policy, which defines the future directions of interaction and cooperation between the extended European Union and Ukraine. The questions of a condition of an environment on Ukraine, opportunity of maintenance of ecological safety from consequences technogenous of failures and accidents are considered, is especial consequences Chernobyl of accident. The organization of joint systems of trans-boundary monitoring of distribution of pollution of air pool is offered, that will allow to transform environment policy an of the European Union from policy of the decision of problems to policy of prevention of occurrence of problems.

Summary

May 12, 2004 the European Commission has accepted new frameworks of the mutual relation with Ukraine. It precisely has defined, that the purpose of new European Neighbourhood Policy of a is creation of a zone of prosperity and good neighbourhood - circle of the friends, - with which it will have the close peace relations and cooperation. The basic purpose becomes cooperation with the countries-partners for the sake of assistance to progress of political and economic reforms, support of deep economic integration, sustainable development both maintenance of political support and help.

The ecological policy of the European Union (EU) is important making both internal, and external policy of EU. If to accept for definition of concept "environment policy" that formulation, which is applied by the European Bank of Reconstruction and Development [EBRD, 2003]: "In line with its mandate to promote environmentally sound and sustainable development, the term "environment" is used in this Policy in a broad sense to incorporate not only ecological aspects but also worker protection issues (These include occupational health and safety, harmful child labour, forced labour, and discriminatory practices.) and community issues, such as cultural property, involuntary resettlement, and impacts on indigenous peoples...", the ecological policy actually is the main direction of development of cooperation and interaction with the next states for EU.

Therefore in the beginning of this research the analysis of various rules of the basic documents of EU will be carried out which define new European Neighbourhood Policy (ENP), from positions of their influence on an ecological condition of the next countries. In particular, it concerns Ukraine - as direct neighbour of the extended EU and country with set of ecological problems. [COM-104, 2003; COM-393, 2003; COM-373, 2004; COM-SEC-566, 2004]

Now between EU and Ukraine there is a set of problems in the field of protection of an environment, which require the immediate decision, but are not solved for the political reasons - especially it concerns consequences Chernobyl of accident.



From rules ENP the opportunities actively follow to influence an ecological condition, which has developed on Ukraine for the reasons historical, economic and political. The modern condition of an environment of Ukraine is very dangerous as for Ukraine - its population and nature, and for the countries, close to it, of the extended EU and all countries of EU. Most burning are the questions of trans-boundary carry of pollution of air and, first of all, carry of radioactive pollution.

Partially to solve ecological problems of negative influence on territory and population of EU of consequences technogenous of failures and accidents, which occur or it are expected on industrial and power objects of Ukraine, it is possible by organization within the framework of realization of rules ENP of joint systems of monitoring of occurrence and distribution of pollution of air pool.

Creation of such joint systems of monitoring of EU and nearest countries-neighbours will allow to transform environment policy of EU from policy of the decision of problems to policy of prevention of occurrence of problems.

1. European neighbourhood policy towards Ukraine

On May 1, 2004 historical expansion of the EU occurred, which can be considered as a large step on the way of safety strengthening and prosperity growth on the European continent. EU expansion also means the change of external boundaries of the Union. It has opened a lot of new opportunities, but also it has put some new issues. The European neighbourhood policy is the key for their solving. It can also help in achieving the purposes of the European safety strategy.

The Commission of the European Communities, in this connection, developed a strategic document "European Neighbourhood Policy". The purpose of the ENP is to inform the neighbouring countries on the advantages of enlargement-2004 in terms of stability and safety strengthening, as well as increase of well-being of all interested countries. It aims at non-admission of new separating lines between the extended EU and its neighbours, and also at giving them an opportunity to participate in the various forms of EU activity on a basis of wider cooperation in the fields of politics, safety, economy and culture. [COM-104, 2003]

The offered technique assumes defining together with the countries-partners a set of the priority purposes, which achievement will approach these countries to EU. These priority purposes, which are supposed to be included in the in common coordinated action plans, will cover a lot of concrete directions of activity: political dialogue and reforms; trade and measures of preparing the partners for a gradual entry on EU home market; justice and internal businesses, power, transport, information community, environment, research and innovations; social policy and direct contracts between the citizens.

ENP is addressed to the present neighbours of EU, and also to ones who became closer to EU as a result of enlargement. They are Ukraine, Russia, Belarus and Moldova. With the countries-partners, including Ukraine, with which the agreements on partnership and cooperation are concluded, the negotiations are being carried with the purpose of defining of questions, which should be included in the preliminary plans of actions.



One of the action plans concerns the environment. The pollution of environment does not know borders therefore it is better to safe and clean it combining the efforts on the international, regional and national levels. Nature protection activity will render favorable influence on the citizens and enterprises, both in the Union, and in the countries - partners. It will help to avoid the conflicts around scarce resources such, as water. Though the benefits of nature protection activity are obvious, it is necessary to take into account, that it frequently becomes a serious financial burden in both for the state, and private structures.

The plans of actions in this area will promote perfection of nature protection activity in the countries-partners and won't admit degradation and pollution of environment, protect health of the population and ensure more rational use of natural resources. The priority purposes in such important areas, as quality of water, waste management, pollution of air and struggle with desertification will be formulated. It will be necessary even more to make active cooperation between the countries - partners and promote ratification and performance of the international agreements. The new policy ENP accepted by the European Commission as a line of the documents contains the basic directions of ecological policy of EU concerning the new neighbours. These fragments from the document [COM-373, 2004] are resulted below.

The method proposed is, together with partner countries, to define a set of priorities, whose fulfilment will bring them closer to the European Union. These priorities will be incorporated in jointly agreed Action Plans, covering a number of key areas for specific action: political dialogue and reform; trade and measures preparing partners for gradually obtaining a stake in the EU's Internal Market; justice and home affairs; energy, transport, information society, *environment* and research and innovation; and social policy and people-to-people contacts.

The ENP brings added value, going beyond existing cooperation, both to partner countries and to the EU. This added value takes a number of forms: The Commission is examining the possibilities of gradual opening of certain Community programmes, promoting cultural, educational, *environmental*, technical and scientific links.

Energy: Enhancing our strategic energy partnership with neighbouring countries is a major element of the European Neighbourhood Policy. This includes security of energy supply and energy safety and security. The European Union is the world's largest energy (oil and gas) importer and the second largest consumer and is surrounded by the world's most important reserves of oil and natural gas (Russia, the Caspian basin, the Middle East and North Africa). It will increasingly depend on imports, from its current level of 50% to 70% by 2030, on present projections. Neighbouring countries play a vital role in the security of the EU's energy supply. Many countries seek improved access to the EU energy market, either as current or future suppliers (for instance, Russia, Algeria, Egypt, Libya) or as transit countries (Ukraine, Belarus, Morocco, Tunisia).

The Southern Caucasus countries are also important in this respect in terms of new energy supplies to the EU from the Caspian region and Central Asia. Improving energy network connections between the EU and its partners, as well as legal and regulatory convergence, are thus strong mutual interests. Moreover, increased energy co-operation provides mutual business opportunities and can also contribute to socio-economic development and improvement to the *environment*.



Action Plans will contain concrete steps to increase energy dialogue and co-operation, and to foster further gradual convergence of energy policies and the legal and regulatory *environment*. This will include policies to promote increased energy efficiency and energy savings, as well as the use of renewable energy and co-operation in energy technologies, such as clean coal. Possibilities for partners to participate in the Intelligent Energy Programme and for their gradual involvement in European Union regulatory practices and bodies (e.g., the European Gas and Electricity Regulatory fora) will be explored.

Environment: *Environmental* pollution does not respect borders and can therefore be best addressed through a mix of international, regional and national action. Enhanced environment protection will bring benefits to citizens and businesses both in the Union and in partner countries. It can help to avoid conflicts over scarce resources, such as water. Whilst the benefits of improved *environmental* management are clear, the fact that it often represents a major short- and medium-term financial burden for both public and private actors is an issue which needs to be taken into account in planning and funding.

Action Plans will promote good *environmental* governance in partner countries to prevent *environmental* degradation and pollution, protect human health, and achieve a more rational use of natural resources. Priorities will be identified in key areas such as water quality, waste management, air pollution and the fight against desertification. Regional co-operation between the partner countries needs to be further enhanced and ratification and implementation of international agreements promoted.

Research and Innovation: The opening of the European Research Area to partner countries is a challenge of the 6th Framework Programme for RTD and a factor of integration of the scientific communities of neighbouring countries. These countries already participate in priorities such as life sciences, energy, transport, *environment*, IST, food safety or societal issues in a knowledge based society, as well as in the specific measures for international cooperation focused on the needs and potential of these countries at a regional level.

Initiatives should focus on issues of common concern, which would benefit from a multilateral approach. As shown by the experience in other geographical contexts (including the Northern Dimension area), regional fora could in many cases offer substantial added value to bilateral efforts. Priority cooperation sectors include: *Environment*, nuclear safety and natural resources. Trans-boundary by their nature, many *environmental* problems can best be addressed at a regional level. Water and air pollution, the management of spent nuclear fuel, the gradual harmonisation of *environmental* standards and legislation are only some of the selected areas regional cooperation should focus on in the short and medium-term.

The main elements of the new Neighbourhood Instrument. Working together through joint actions to address common challenges, in fields such as *environment*, public health, and the prevention of and fight against organised crime; ... The ENI will operate through two separate funding windows: Window Two will provide more flexible support for wider trans-national co-operation involving actors and beneficiaries from both EU Member States and partner countries.



Co-operation will be mostly focussed on specific themes to be defined in the regulation based on identified common challenges in fields such as *environment*, integration into energy, telecommunication and transport networks, public health and the prevention of and fight against organised crime. The Commission will also have the possibility to identify, select and propose projects of particular technical and political importance for funding. Eligibility will cover all the territory of EU Member States and the relevant parts of the territory of partner countries. Programming will be centralised in the Commission. Implementation will also be centralised, although indirect management through delegation to external bodies such as executive agencies may be considered.

2. Ecological safety in Ukraine

From the point of view of ecological safety it is necessary to define the following specific economic and social features of the development of Ukraine [MEPU, 2006]:

1. Extensive development of economy accompanying with one-target use of natural resources, huge volumes of production and sale of raw material, absence of due system of processing household and industrial wastes, development of new and writing off the broken farmland;
2. Deformed structure of national economy with prevailing nature-exploiting productions creating constant load on ecosystems;
3. Militarization of economy;
4. Unreliability of technical systems and insufficient qualification of the staff at the enterprises with increased ecological risk;
5. Out-of-date and inefficient nature protection equipment at finishing stages of technological chains;
6. Growth of the urban population, growth of the offer of goods and services from state and private sectors of economy at the expense of consumption of natural resources;
7. Spontaneous and anthropogenous failures, accident and disaster.

Despite the presence of normative base on ecological safety and rather ramified system of state structures connected to solving the problems of ecological safety, *the problems of ecological safety of the country don't decrease, though they continue growing.*

What is the reason of such situation? There are two explanations. First one is a transitive character of our society with its instability. It defines insufficient attention to the problems of ecological safety. The other reason is weak development of theoretical and applied aspects of the problem of ecological safety in Ukraine. In the world it is recognized, that the core of the concept of ecological safety is theory of ecological risk and its applied part - definition of a level of acceptable risk (the risk in many respects is defined according its influence on health of the people). The faster our country will reach the European level of theoretical and practical development in this area, the more successfully the task of maintenance of national safety will be solved not only in Ukraine, but also in the countries of European Union. The reasons of ecological danger are technological and ecological crises, which also touched Ukraine.

The ecological danger is a probability of destruction of environment, as a result of uncontrolled development of economy, backlog of technologies, natural and anthropogenous failures and accidents, owing to which the adaptation of alive systems to conditions of existence is broken.



Technological crisis: With the introduction of mankind into epoch of scientific and technical progress, prompt growth of a technical sphere, frequency and the scales of damage from technological accidents became comparable to natural disasters. These accidents can cause far-reaching negative consequences touching territories of the countries, next to Ukraine.

Potentially as most dangerous there are nuclear objects, chemical and iron and steel industry, oil processing, pipelines, transport. But also in daily life, thousand "silent" technogenous accidents produced by emissions in the atmosphere and reservoirs, burial in the ground of various harmful wastes take place. Their insidiousness is, that, similarly to accumulation of a radio-activity, toxic influence on the man and alive organisms occurs gradually and imperceptibly up to the certain level. The cumulative effect, however, with each year grows and in a result threatens with inevitable killing both nature, and man.

Prominent scientists regularly warned on pernicious influence on man's health of a technogenous pollution. So, in 70 years the assumption was stated, that if in the environment there is a sharply increased mutagenic factors, such, as radiation, influence of chemical connections, the genetic information of the man can be broken. Thus there will be a real danger of destruction of genetic bases of the man. This threatens to the mankind with degradation and degeneration.

In Ukraine there are cities and industrial centres, where the level of pollution is higher than 10 extreme allowable concentration, mg/m^3 . In a zone where iodine-organic and fluorine-organic synthesis is produced the mass diseases of children are observed. The children in the age of 12-17 years turned to have hyperplasia of a thyroid gland, disfunction of adrenal gland, which caused disharmonic formation of secondary sexual attributes, infringement neuroendocrine system.

In the large industrial centres (Donetsk, Mariupol, Zaporozhye, Lugansk etc.) pathology of teeth (the change of enamel of teeth) is accompanied by changing of the whole musculoskeletal system of children. The pollution of an environment affect a general physical condition.

The size of risk of diseases of nervous system in the zones of ecological trouble exceeds 60%. The main reasons which cause children's physical inability are defeats of the central nervous system, illness of a brain (intellectual backwardness, mental illnesses) - 30%, illness of nervous-muscular systems, including cerebral paralysis - 20% of general number of the children - invalids.

The special danger is represented by lead emissions. Even its small dozes render essential influence on development of a brain of children. The same influence renders mercury. Adult population suffers from diseases of liver, kidneys, lungs, while the occupational diseases are widely distributed. It is necessary to note, that the basic group of risk is the population in the age of from 30 till 45 years, that is the most able-bodied population of Ukraine. The pollution of water causes illnesses of urinary system, bodies of digestion. Condition of many sewage disposal plants in large industrial cities of Ukraine is very pitiable. The lack of financing resulted in the fact that water in waterpipes, contains a plenty of harmful substances and microorganisms and is not suitable for use.



Foodstuff polluted with heavy metals, pesticides, result in such diseases as bronchial asthma, tuberculosis, sharp respiratory infections, illnesses of bodies of digestion.

The examples demonstrating a condition of health of children and the adults, evidently confirm ecological danger to the Ukrainian population, and a threat for its gene pool.

Ecological crisis: Ecological conditions in Ukraine are constantly worsened. One of the basic reasons is that the most part of the basic production assets of the country, hopelessly out-of-date, worn out and deprived besides normal maintenance service comes to a catastrophic condition. Potentially dangerous national objects of nuclear, power, chemical, transport, metallurgical, machine-building, defensive and building complexes were created and maintained without the due account of all components of ecological and technological safety, conditions and opportunities of protection of the population, objects, territories and environment from technogenous and natural failures and accidents.

The ecologically imperfect technologies were used on a large scale in industry, agriculture, power, and transport. Owing to disorder, corruption, appearance of criminal structures, dishonest business, great number of nature managers, the process of plundering of natural riches, injurious destruction of a nature began.

The analysis of extreme situations in Ukraine for the first quarter of 2004: During this period on Ukraine there were 67 extreme situations, which according to the State qualifier of extreme situations were allocated as follows: 38 - extreme situations technogenous of character; 21 - natural character; 8 - social-political character. Extreme situations of military character is not registered. [MUES, 2006]

In a consequence of these extreme situations 86 men (from them 9 children were lost) and 158 men (from them 91 children) have suffered.

The greatest quantity of the extreme situations, which have lost in a consequence, is registered in Donetsk area (16 men was lost), the majority from which (10 men) were lost in a consequence of three extreme situations connected to fires in apartment houses.

The greatest quantity of the injureds (60 men) is registered in the Kharkov area, majority from which (55 men, from them 46 children) which were ill dysentery in small city Kupiansk.

Significant quantity of the injureds (35 men) was registered in the Lvov area prevailing which majority (28 men, including 15 children) have poisoned with toxic substances.

During the first quarter of 2004 38 extreme situations technogenous of character are registered, at which 44 men were lost, including 5 children, and have suffered - 55 men.

The analysis of extreme situations technogenous of character after the reasons of their occurrence shows, that in more than half of cases they carry technical character - unsatisfactory condition of industrial objects, which are a consequence of a deterioration of the basic production assets. Infringement of the requirements of safety during operation of the equipment, machines, vehicles and non-observance of rules of realization of technological processes of manufacture are basic among the reasons of organizational character.



The problems of ecological danger are not indifferent to the population of Ukraine. The public organizations and associations are created everywhere, which activity is directed on revealing of problems of ecological safety, protection of environment and health of the people; on distribution of the authentic information about conditions of environment and health of the population of Ukraine; on realization of public ecological expertise and estimation of ecological risk; protection of the rights and interests of the citizens, public control of observance of the legislation in area nature management.

Ecological education widely develops. So, Donetsk National University is one of the first higher educational institutions of Ukraine, where at the physical faculty the speciality "Complex ecological and economic monitoring" was opened in 1996 where the experts in the field of ecological monitoring are prepared. The similar specialities are opened in other higher educational institutions of Ukraine. It testifies that the state is interested in the qualified experts in the field of environmental protection.

3. Ecological conditions in Ukraine

Basic problems, which excite both experts in the field of protection of environment, and all inhabitants of cities of Ukraine, are management of natural resources, ecological condition of atmospheric air, superficial waters and soils, influence of the ecological factors on health of the population, waste processing, condition of green plantings and protected natural territories and others. The ecology of our country excites not only us, but our neighbours who are also concerned with its situation. The ecology is not limited to the borders of one state. The European community attentively observes the results of activity of Ukraine in this direction. The committee on ecological policy of UN European economic commission during several years studied a condition of environment in Ukraine and has made a conclusion, that the productivity of activity in this area is far from a desirable level. [MEPU, 2006]

The most complex and dangerous question in protection of an environment of any country is management of nuclear safety. In Ukraine the situation was complicated after failure in Chernobyl. But even before it in some regions of Ukraine there was an uncontrolled radioactive pollution. The consequences of the dangerous technologies of uranium obtaining began to be investigated only recently. But even if something was known earlier, the information would be hidden from community. Today there are no satisfactory conditions for preservation operational radio waste and fulfilled fuel accumulated during last 20 years. Closing of Chernobyl plant doesn't solve the problem of a plenty of radioactive materials of all categories left.

Ukraine received the powerful nuclear inheritance from the USSR:

- 5 atomic power stations (APS) with 15 reactors;
- 3 uranium mines and ore dressing manufactures located in the southeast;
- 2 research reactors in Kiev and Sevastopol;
- 500 small users of the sources of ionizing irradiation;
- and something in a military arsenal.

Ukraine belongs to the countries with the highest level of production and accumulation of waste. Each year 700-1720 mln. tons of waste are accumulated here and with each year this volume grows. Only small part of these waste, is less than 10-12 % comes back in manufacture, the rest leaves on superficial dumps. All this dust is placed on the area of 160 000 hectares.



Waste can be divided on industrial, toxic and household. If the volume of industrial wastes has decreased, it is only at the expense of recession of manufacture. Nevertheless, toxic and household waste continue to grow. There are no conditions for their preservation and new effective technologies for their processing in Ukraine.

The objects of industrial and household waste frequently do not meet the requirements of environment safety. Practically all objects began to be used 10-30 years ago. The majority of them are filled on 90%. During construction of some objects the appropriate precautionary requirements were not kept, therefore they become an ecological threat on the regional scale.

All these problems can be solved under the conditions of appropriate financing and application of new cleaning technologies.

Protection of air and water resources also requires attention. What do we breathe with? It is considered that there are five traditional pollutants - firm substances, sulfur dioxide, oxides of nitrogen, oxide of carbon and non-methane organic connections, including hydrocarbon. In some regions the emissions in air nevertheless remain rather high. Such regions are Kryvyi Rih, Mariupol, Donetsk, Enakieve, Dnipropetrovsk, Zaporizhzhya, Makiivka, Gorlivka. And what do we drink? Drinking water appreciably does not meet state standards of quality of drinking water (chemical, bacteriological and sanitary standards). The inhabitants of cities know, that tap water is better to use only after boiling. Purifying structures are out-of-date. Their significant quantity does not work properly. Because of unsatisfactory maintenance service and technical condition of some structures (22% of a sewer network is in a critical condition, 46% of pumps require replacement, 25% of structures exhausted the technical resource), the experts predict deterioration of a situation in the near future.

At the same time there are no sufficient funds for restoration and construction of modern purifying structures. The population of Ukraine does not pay for water and water drain. Therefore preparation and supply of water is not recompensated. On the other hand, where can impoverished population take money?

As it is impossible to call an ecological condition of environment in Ukraine satisfactory, it has an effect for a condition of health of the population. Illnesses and mortality grow. High level of infectious and parasitic diseases, the flares of illnesses connected to products and water, became the basic problems of health of the population. Foodstuff are not ecologically clean, as there practically no ecologically clean regions in Ukraine. There is no appropriate control of quality of foodstuffs.

The influence of Chernobyl failure on health is still studied. The research show increase of diseases of thyroid gland cancer among children. The tragedy in Chernobyl testifies, that the duly warning of danger could keep life and health to many people.

At the end of 2000 certification of ecologically dangerous objects at the territory of Ukraine was completed. It has shown, that in the whole 7541 technical objects makes potential threat for the country and its inhabitants, and more than 1,5 thousand - real threat. And 144 of them require acceptance of urgent measures.



The Black and Azov seas became the present accumulators of pollution – waste from the territories of many European states where hundred of enterprises were constructed based on the Soviet technologies were drained here. Annually 12,5 milliard cubic meters of waste water were discharged in the Black sea, 4 milliard cubic meters - in Azov Sea. According to the experts, the chemical ammunition with mustard gas and lewisite, flooded during Great Patriotic War in coastal waters of Sevastopol and, in particular, in Cazachya bay, because of corrosion of metal can blow up at any time. In after-war time the ostensibly destroyed ammunition more than once tried to get. In 1998 according to the decision of government the search of a chemical ammunition has renewed, and trained dolphins help to found such ammunition on various depths. However this search should be stopped soon. Because of absence not only money, but also precise program on utilizing toxic substances lifted from sea depths.

Recently in mass media of Ukraine many publications concerning condition of hydraulic engineering structures on the river of Dnieper and possible consequences of their break have appeared. So, the chief of independent international group of scientists on forecasting consequences of accidents Vasyl Kreda named the Kiev reservoir as the most dangerous object not only in Ukraine, but also in the world. In the Council of Europe a question on complete liquidation of a 30-kilometre zone repeatedly rose, including Kiev sea. From the scientific point of view, Dnepropetrovsk cascade is an "inclined object". If owing to a small earthquake Kyiv hydroelectric power station suffer, the earthen dam, which accident rate now makes 93 %, will be destroyed, and as a result Obolon, Troyeshina, the whole Ukraine will suffer from "the radioactive tsunami from water of the Kiev sea". On the data of group, in case of break of the Kiev dam, 27 Ukrainian cities, and also Zaporozhye APS will be destroyed.

From 14 up to 15 mln people will be lost. 93 % of an accident rate of the Kiev dam give the bases to the scientists to consider the Kiev sea which has saved during 18 years after Chernobyl accident nearly 500 mln tons of high radioactive oozy stratifications most dangerous object of all globe, as the territory, on which the silt passes, will not subject to rehabilitation during the nearest 1000 years. However danger proceeds not only from the Kiev reservoir. On Dnieper 6 hydroelectric power stations with reservoirs are located: Kiev, Kanev, Kremenchug, Dneprodzerzhinsk, Kahovka Hydroelectric Power Station (HPS); Dnepro HPS. And all of them are to some extent in a unsatisfactory condition.

The level of environment contamination in Ukraine is now 6,5 times higher, than in USA, and 3,2 times higher compared to the countries of European Union. On calculations of the experts, 20 % of substances, discharged in the atmosphere by our industrial sources, are mutagenic and threaten the health of not only present, but also subsequent generations. Many questions on protection of an environment need financing. Available fund are scanty. Therefore one of priority directions of Policy of a neighbourhood between Ukraine and EU should become questions of financing of the projects on protection of an environment.

5. Monitoring and control of pollution of an environment

The system of monitoring of pollution is a part of an existing service of supervision and control of a condition of natural environment. It uses its experience, system of observant stations (certainly, with inclusion of measurements of new elements), lines of telecommunications and data-processing centres.



The monitoring includes the following basic directions of activity:

1. Supervision over the factors influencing on environmental natural environment, and behind a condition of environment;
2. Estimation of an actual condition of natural environment;
3. Forecast of a condition of environmental natural environment and estimation of this condition.

Thus, the monitoring is a system of supervision, estimation and forecast of a condition of natural environment, which does not include quality management by last.

The monitoring is multi-purpose information system. Its basic tasks are:

1. Supervision over a condition of biosphere;
2. Estimation and forecast of its condition;
3. Definition of a degree of anthropogenous influence on an environment;
4. Revealing the factors and sources of such influence.

The most universal approach to definition of structure of system of monitoring of anthropogenous changes of natural environment is its division into blocks: "supervision", "an estimation of an actual condition", "the Forecast of a condition", "an Estimation of predicted condition". The blocks of "Supervision" and " the Forecast of a condition " are closely connected among themselves. The construction of the forecast, on the one hand, means knowledge of laws of change of a condition of natural environment, presence of the circuit and opportunities of numerical account, with another - the orientation of the forecast substantially should be defined structure and structure in an observant network by feedback.

Classification of monitoring: In the literature the following kinds of monitoring are considered. The geophysical monitoring carries out definition given about pollution, turbidity of an atmosphere, selective meteorological and hydrological characteristics of environment. To this subsystem it is necessary to attribute and monitoring of various elements of lifeless making biosphere, including designs, buildings created by the man.

The biological monitoring defines condition of biotic components of biosphere and its reaction to anthropogenous influence. The biological monitoring includes monitoring alive organisms-populations (on number, bioweight, density and other attributes), subject to influence. In this subsystem of monitoring it is expedient to allocate the following supervision:

1. Behind a condition of health of the man, influence on it of environment (medical-biological monitoring);
2. Behind most sensitive to the given kind of influence (or to a complex of influence) populations (for example, vegetation to influence of sulfur dioxide) or behind "critical" populations in relation to the given influence (for example, zooplaktones in Baikal to dumps of the cellulose enterprises).

The special place in biological monitoring borrows genetic monitoring (supervision over possible hereditary changes from various populations).

The ecological monitoring is, apparently, more universal, covering questions both biological, and geophysical monitoring in their close connection. It is especially important, when the supervision is carried out at a level of ecological systems.



The monitoring in various environments (various environments) includes:

1. Monitoring of an earth layer of an atmosphere and top atmosphere;
2. Monitoring hydrosphere;
3. Monitoring lithosphere (first of all of ground).

Classification of systems of monitoring: Not less important from the practical point of view the classification of systems of monitoring by the factors is represented and sources of influence. Monitoring of the factors of influence - monitoring various pollutants and other factors of influence, to which is possible to attribute electromagnetic radiation, warmth, noise. Among sources of influence and first of all of pollution it is necessary to allocate dot stationary (factory pipes), dot mobile (transport) and spatial (city, field with the brought in chemical substances) sources.

The control of atmospheric air. The basic tasks of system of monitoring of air pool are:

1. realization of continuous supervision behind pollution of air pool, basic sources of emissions of harmful substances and meteorological conditions - data from stations of supervision behind a condition of an atmosphere (extreme allowable concentration (EAC) polluting substances extreme allowable emissions (EAE), weather forecast);
2. an estimation of a condition of pollution of air pool in view of meteorological conditions, and also in view of changes of the climatic characteristics - parameters of environment to which concern: a gradient of temperature, direction and speed of a wind, cloudiness, radiation, deposits, speed of fall of temperature and pressure, meaning of "background" concentration of impurity in air;
3. short-term and long-term forecasting of a condition of pollution of air pool in view of weather forecast, forecast of changes of the climatic characteristics and characteristics of emissions of harmful substances in an atmosphere;
4. development of the recommendations on improvement of a condition of pollution of air pool in various intervals of time;
5. an estimation of efficiency of spent measures, programs realized projects directed on improvement of a condition of air pool.
6. the main objects of a subsystem of monitoring of air pool should be sources of harmful emissions in an atmosphere (stationary and mobile), atmospheric air in various zones and areas of city.

The system of monitoring of air pool is intended for realization of continuous supervision behind pollution of atmospheric air and meteorological conditions, and also for an estimation of this condition.

The following information is necessary for this purpose: the characteristics of the standard of quality of air pool (in the most widespread kind - norm EAE); the characteristics of a condition of air pool (including the items of information on the meteorological characteristics and characteristics of pollution of air in some territory) for various intervals of time; the characteristics of emissions of harmful substances in an atmosphere; the short-term and long-term forecasts of a level of pollution of an atmosphere in view of weather forecast, change of the climatic characteristics and characteristics of emissions.



Information maintenance of monitoring: Works on creation of complex monitoring of anthropogenous changes of an environment now are conducted which should represent the monitoring system based on all-round supervision, analysis of a concrete condition and forecasting of the tendencies of change of the major ecological factors. The physical, chemical and biological parameters of natural environment concern to last. They should be fixed on some spatial - temporary structure determined depending on intensity pollutants, laws of their distribution, affinity to the occupied items. As an example of monitoring of an environment we shall result the following example. The general circuit of a software of system of monitoring contains the monitor (central dispatcher), manager of work of separate subsystems. Among them a subsystem of the tax of the information, its storage and primary processing, subsystem of display of the information, subsystem of accounts of concentration, drawing up of the forecasts etc. the Monitor carries out the following functions: organization of interaction between separate subsystems, organization of a service of time, test control of system of ground measurements and other service functions.

The subsystem of the tax of the information carries out connection between computer center and equipment of stationary posts and mobile laboratories, primary sorting and operative storage of the assembled data, test control of blocks of a network of ground measurements. The subsystem of a storage and primary processing of the information consists of various databases. The subsystem of accounts and forecasts contains base of models of carry of pollution in view of the meteorological factors of a relief etc., and also base of models for construction of the forecasts. At last, the subsystem of display is intended for documenting results of the control of pollution and emissions, and also for accounts and forecasts. The display of results can be carried out in the cartographical form, or as the tables, textual information the combination of the various forms of display of the information Is etc. possible also.

As database the set of the stored operational data used by applied systems of some enterprise refers to as. According to general structure of a network of ground measurements the following basic databases on: 1) air are created; 2) emissions and waste; 3) water objects; 4) cartography.

The system of data gathering on quality of air receives the information on a qualitative and quantitative condition of meteorological and physical sizes received from automatic devices for measurement of emissions, background parameters of meteorological automatic devices, mobile laboratories. The information is brought in memory and is processed for the further reception of parameters, which will be used directly at planning nature protection measures.

Per 70 years in USSR the Nation-wide service of supervision and control of a condition of an environment was organized. The circuit of this service now is used in the countries former USSR, including in Ukraine. In the system of Ukrgidromet behind quality of atmospheric air of the occupied items the supervision from the following posts are conducted: stationary; routing; mobile posts. On stationary posts the pavilions such as "Post 1", "Post 2", "Air" are established which are equipped with the equipment for selection of tests and devices for definition of meteorological parameters.



For posts of supervision GOST 17.2.3.07-86 establishes 4 programs of supervision: complete (daily supervision in 1, 7, 13 and 19 hours with reception of the information about daily average and single concentration of polluting substances); incomplete (daily supervision in 7, 13 and 19 hours with reception of the information about single concentration of polluting substances); Reduced (the supervision will be carried out in 7 and 13 hours at temperature of air below -450°C in places, where the contents of impurity low); daily (continuous selection of tests for definition of daily average concentration of polluting substances).

The choice of researched impurity is carried out depending on quantity of emissions of these substances, their class of danger, characteristic size of city disseminating ability of an atmosphere of concrete area. It is considered, that at insignificant volumes of emissions, when earth concentration are close to background, the supervision are inexpedient.

The state system of ecological monitoring in Ukraine is strictly regulated and is unified state standards and appropriate acts. The list of parameters of a condition of an environment, which is defined by state services, is precisely established. The requirements to used methods and means of measurements, frequency of selection of tests etc. also is precisely regulated. However system of ecological monitoring in Ukraine has a number of lacks: the following to the rules results that the analyses which are not having to practical value frequently are carried out; use only of authorized techniques results in failure of purchase of the advanced analytical equipment; the character of dispersion of polluting substances in air is reflected only with the help of modelling accounts; the small quantity of items of supervision results in absence of the authentic information about a condition of atmospheric air; the system as a whole does not provide operative influence on sources of pollution and operative informing on a condition of an environment.

In Ukraine the Automated Monitoring Systems of an Environment (AMSE) also are abroad developed. AMSE realizes the following basic principles of organization of modern automatic ecological monitoring: the long-term round-the-clock control of ecological parameters; complete autonomy of stationary posts; automatic self-checking of sensitive elements; PC as the central post.

According to above mentioned principles the work of the base circuit ASME for k of stationary posts at the control of atmospheric air is submitted. The test of air is prepared (is drained and is cleared of a dust) in the block. Then it acts on sensitive elements - gauges $D_1 \dots D_n$ of harmful components, where the size of concentration turns to an electrical signal. These signals, and also signals from meteorological gauges (temperature of air, direction and the speed of a wind etc.) is round the clock processed by the microcontroller and the received information on inquiry of the computer of the central post is transferred to it through the modem.

The self-checking of sensitive elements is provided by periodic automatic inclusion of the generator of mixes and submission of gas of the certain concentration on gauges - instead of atmospheric air. The autonomy of a stationary post is achieved by use of gauges, not requiring service, and microcontroller working on the given program.



The similar systems of monitoring of pollution of air are created and work in the countries of EU as ground basing [Leyendecker, 1997], and the satellite systems of supervision [AIRES, 1997], for which created in Ukraine ASME can give the additional information, thus increasing geographical scope of these European Systems of Monitoring.

Conclusions

The executed analysis ecological and technogenous of a condition of an environment of Ukraine, and also the analysed ecological aspects of new policy of EU in relation to the countries - neighbours, allow to make the following conclusions and to offer a line of the recommendations on the further cooperation of EU and Ukraine in the field of an environment.

The pollution of an environment of Ukraine more is not only its internal problem, is especial in sphere of pollution of air and water pools. Uncontrollable trans-boundary carries of pollution, when the results of such carry are fixed only and the source is determined guilty of them, should depart in the past. Ukraine aspires to approach the ecological norms to the requirement of the ecological standards of EU, not only with the purpose of improvement of an ecological condition of the environment, but also for the sake of all population of Europe, as which integral part it considers herself.

The European ecological policy now begins to pass from methods of struggle with consequences of the and neighbour's ecological problems to organization of system of the prevention of occurrence of such problems both to territory of the countries of EU, and at the countries - neighbours, to which Ukraine concerns also. The main element of such systems is systems of monitoring of carry of air pollution, which are necessary be for organizing and for developing as it is possible more widely in the geographical plan and as it is possible more richly by way of concentration of control points.

The following step of the European ecological policy should become organization of active participation of the European Systems of Monitoring of air pool in the joint ecological control in territories of the countries - neighbours, and also interested assistance in the decision of ecological problems of the countries - neighbours not waiting of growth of these problems up to scales all-European or global.



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IR THEORY AND THE ENVIRONMENT: PARADIGMS OF ISOLATION AND CONVERGENCE

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Although the environment has been among the most prominent concerns of humans from the very beginning, the discipline of International Relations (IR), seemingly studying all types of relations among nations, to a great extent detached itself from environmental issues until very recently. This paper analyzes broader generations in IR theory with regard to the issue of environment, and tries to lay out the foundations for the next phase in IR- Environment liaison.

The Environment and the IR is one of an uneasy relationship. But this is not something to blame solely on the IR. The over-fragmentation of science, in general, is one of the causes for this ignorance. Once, the philosophers were thinking and discussing about utterly everything. Thinking in totality, and of totality, certainly bears some disadvantages together with benefits. It could bring overgeneralizations and could well drive away thinking on peculiarities and unique cases. Ancient thinkers related environment to the destinies of nations. They were the first “environmental determinists”. In time, specialization won over philosophy. The tree of science ramified tremendously. The “interdisciplinarity”, or, more accurate to say “transdisciplinarity” which is broader than the former and entails the blurring of borders among the disciplines, is a recent re-invention. The IR, as a relatively young discipline was born when social science was effectively “denaturalized”. Yet, the very particular atmosphere into which IR had come into being is also worth mentioning. The paper begins with earlier accounts about human-environment relationship. This is followed by an analysis of growth of IR as a sterile discipline. Next, the re-invention of environment as a political issue will be discussed. Securitization of environmental issues will be discussed as one of the most important frameworks that developed in recent decades. It is one of the aims of this paper that whether the debate between securitization of environment and its critics will likely to endure, or this dialog will nurture a more comprehensive understanding about a more successful cohabitation of the IR and the environment.

1. INTRODUCTION

Although the environment has been among the most prominent concerns of humans from the very beginning, the discipline of International Relations (IR), seemingly studying all types of relations among nations, to a great extent detached itself from environmental issues until very recently. This paper analyzes broader generations in IR theory with regard to the issue of environment, and tries to lay out the foundations for the next phase in IR- Environment liaison.



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2. EARLIER APPROACHES AND DENATURALIZATION OF SOCIAL SCIENCE

Until the Cold War context absorbed nearly all IR theory and smothered academic interest in international environmental issues, there were plenty studies concerning human-environment relations, and, it is “environmental determinism” that best characterizes these earlier approaches.

Carl Ritter, Ellen Churchill Semple, Ellsworth Huntington, and Thomas Griffith Taylor were said to be prominent environmental determinists. The basic argument of the environmental determinists was that aspects of physical geography, particularly climate, influenced the psychological temperament of individuals, which in turn shaped the culture and society that those individuals formed. For example, tropical climates were said to cause laziness and promiscuity, while the frequent weather changes of the middle latitudes led to sharpened intellects. Also, the wealth of particular societies was generally attributed to the fertility of the land they inhabited. [2] The role of environmental factors in Euro-dominance in recent centuries was among the most frequent themes in environmental determinist literature. [3]

Daniel Deudney pointed out that although earlier naturalist and geopolitical approaches examined political consequences of environmental change and relations between environment and state-society complexes, in time, they were almost forgotten and neglected in the social science realm. Deudney calls this phenomenon “denaturalization of social science”. Thus for Deudney, there are two kinds of social science: natural-social science and social-social science. In recent decades social science cut off from its naturalist dimension. Until recently, IR neglected natural causes of social phenomena as a denaturalized social science. Deudney suggests “bringing nature in” as one of the causes of social and human behavior.



3. THE GROWTH OF IR AS A STERILE DISCIPLINE AND THE DOMINANCE OF REALISM

The discipline of International Relations was said to be born out of a debate between idealists and realists. The First War was a catalyst for idealism. It was such a catastrophe that should not be let repeat again. The then US President Wilson's ideas, crystallized in his "Fourteen Points", shaped the post-First World War international order. The League of Nations was created to supervise the peace and to administer the former colonies of defeated powers and the principle of self-determination was partially implemented. Idealists, focused on the importance of international organizations, public opinion, and open diplomacy in protecting peace. They wholeheartedly believed in progress and the benevolence of human nature. But the failure of League of Nations system and the eruption of Second World War buried the idealist thinking. The failure of appeasement policy of France and Britain, disastrous Second World War, the atomic bomb, ideological rivalry between the superpowers, division of World into spheres of influence, were among the main contextual factors in which realism found a fertile ground to flourish. Realism, as the dominant theory of the Cold War era, tried to explain world politics around terms of power, national interest, security, international anarchy. Realism in international relations was developed with writings of Edward Hallett Carr, Hans Morgenthau, and further advanced in subsequent decades by neo-realists, Kenneth Waltz being the utmost example. In realist analysis, nation-states are the primary actors of international politics, and assumed to be unitary as well as rational. In an absence of world government, or any superior authority to regulate international relations, each and every state should depend on its own power capabilities. This is simply called "self-help". Primary interest for states is that of "survival". Once states guarantee their survival, they can quest for lesser interests such as economic welfare or environmental protection. This understanding is closely related with one of the underlying themes of realism; the dichotomy of "high" and "low" politics. For realists, whereas high politics refer to the major concerns of interstate relations, namely international security, military issues; low politics connote "secondary" issue areas such as economics, environment and human rights. With this framework of analysis, realism almost totally ignored the issue of environment. Also, they missed the point that environmental issues could threaten international security and national securities of states. The dominance of realism was challenged soon.

4. RE-INVENTION OF ENVIRONMENT AS A POLITICAL ISSUE

Then, in 1960s, the international context began to change into one that enabled the environmental issues could find some place to be taken into consideration. The popular awareness was steadily growing since the famous "London Smog" of 1952, which caused or advanced the death of thousands and became an important impetus to the environmental movement. More importantly, the thaw in superpower relations, known as *détente* has relaxed the grip of hardliner realism on the discipline. Signature of SALT I and II, 1975 Helsinki Accords, wide ranging series of agreements on economic, political, and human rights issues, and Willy Brandt's *Ostpolitik* were important developments of the era. While the East-West ideological confrontation was fading slightly, the issues regarding the rising material gap between the North and South gained importance. Not the sustainability of order, but the concerns of inequality and justice becoming more prior around the globe. Last, but not the least, actors other than states began to be influential in international scene. Robert Keohane



and Joseph Nye challenged the centrality of state showing that the complex interdependence created by transnational actors and networks rendered states less powerful. Thus, the change of context went hand in hand with the challenges against prevailing theoretical paradigms.

Rising popular awareness was also a very determining factor in the re-definition of the importance of environment in 1960s. Even today, environmental politics very much remains to be a socially-driven policy sector, unlike many other policies. The growth in environmental literature was critical in this respect. In 1962, Rachel Carson published the “Silent Spring”, focusing on the dangers of pesticides on human health. It became a bestseller and attracted the popular attention to the environmental issues in general. Paul Ehrlich, in 1968, warned about the serious menaces of uncontrolled growth of population in the world. He aptly used the term “population bomb” to more clearly describe what he was putting forward.

Ehrlich’s argument was a neo-Malthusian one which was focusing on the population issue and presenting a “doom scenario”. However, an apparent pessimistic tone was the overriding character of almost all studies of the time. In the same year, Garrett Hardin proposed the argument about “the tragedy of the commons”. Barry Commoner, in 1971, drew attention to “negative externalities of production technologies”. In 1972, Donella Meadows et al. published a study, “The Limits to Growth”, which produced a big deal of excitement among the general public as well as academic circles. They contended that, our planet had a maximum carrying capacity and now we were almost reaching the limits of this capacity. Unless necessary steps were taken the planet Earth would not be a place to live on. Meanwhile, social activism was getting stronger, and with a popular backing, the first Earth Day was celebrated in 1970. Greenpeace, which later became the symbol of ecological activism, was established in 1972.

Thus, throughout in late 1960s and 1970s, the mushrooming of arguments, articles, books and all types of social activities in the developed world created such an atmosphere that the environmental concerns could not be kept at bay as easily as before. Nonetheless, this atmosphere was not much realized in the developing world, “the South”, as they were not experiencing “the negative externalities of production technologies” yet, and they were pressing hard for the attainment of “modernity” which the North was trying to escape from. With regard to their approaches to the environmental issues, the North and the South were drifting apart sharply. The growing gap between the environmental discourses of the North and the South would soon engender a debate about whether the Southern practices were fitting the environmental priorities of the North, and more important than this, whether the South was posing dangers for the North. Yet, before analyzing the different discourses of the North and the South, it is the bigger issue that whether environment has become a serious matter, that now we turn.



Two broad streams emerged regarding the question whether environmental degradation is really dangerous to the very existence of mankind. One of these two approaches to the environment is composed of Ecoradicals. One of the major scholars in this line of thinking, Eekersley argues that environment has become a serious issue and drastic changes are necessary to reverse the tendency of environmental degradation. In this vein, Lee suggested that “real sustainability” was what we need. By real sustainability he means the equality of man with nature. Thus, man and his activities- mainly economic activities- should not be thought as superior to natural environment. By contrast, modernists broadly argue that

environment is not a very serious issue, indeed. Among modernist discourse, Björn Lomborg is an outstanding figure. He tried to show statistically that environmental degradation is a myth. He even argued that everything is going better. So, there is nothing to worry about much. Even so, the modernity and its progress will help us to deal with the possible environmental problems in the future.

Instead of building on this general ontological survey concerning whether there is an environmental degradation serious enough, in this paper, it is argued that the growing interest of environmental problems along with the reflections it created in IR theory could be analyzed in the analytical process of securitization of environment and its critics.

5. SECURITIZATION OF ENVIRONMENT AND ITS CRITICS

In 1983, before the Cold War ended, Richard Ullman published the article “Redefining Security”. Instead of confining national security into military sphere, Ullman suggested a broader definition. According to this, a threat to national security is an action or sequence of events that (1) threatens drastically and over a relatively brief span of time to degrade the quality of life for inhabitants of a state, or (2) threatens significantly to narrow the range of policy choices available to the government of a state or to private, nongovernmental entities (persons, groups, corporations) within the state. [4]

Thus, in Ullman’s conceptualization of national security, environmental issues could find a place. The extension of the meaning of security has been accelerated in the post-Cold War era. As the debate unfolded, security has become to be understood less by military but more by other “sectors”. Buzan, Wæver and de Wilde suggested that there are at least five sectors of security which can be conceived in terms of specific relationships: the military, the political, the economic, the societal and the environmental sectors.[5] United Nations Human Development Report of 1994 reiterated this broadened security agenda. UNDP Report of 1994 categorized threats to human security under seven headings: economic, food, health, environmental, personal, community, and political.

The redefinition of security had an important side-effect: the securitization of the environment. Although the process securitization of environment started much earlier; if one looks for a definitive turning point in development of environmental security literature, it will be the year 1989. Simon Dalby substantiated the point:



Against the backdrop of the long summer drought of 1988, alarmist reports of huge tropical forest destruction, especially in Brazil, renewed concern about global climatic change and stratospheric ozone depletion, the relaxation of the cold war, and the drastic rethinking of Soviet security policy, policy discussions in Washington were ripe for some new topics and thinking. Just as Francis Fukuyama was declaring the end of history and the triumph of liberalism, the environment, too, became part of the foreign policy discussion and the focus for discussions of endangerment.[6] Furthermore, it was an annus mirabilis for the history of environmental security also because of publication of several groundbreaking articles, linking environment and security. Norman Myers, Jessica Tuchman Mathews, Mike Renner, Neville Brown, Peter Gleick, Arthur H. Westing, Josh Karliner, and Patricia Mische were authors of , what we may call, “Papers of 1989”.

There was no shortage of definitions for both environment and security. But, what about “environmental security? Richard Matthew provided a basic definition of the environmental security. In this definition, environmental security is a condition in which environmental goods are used in a sustainable way, fair and reliable access to environmental goods is universal, and institutions are competent enough to address emerging conflicts. [7] However, although this definition seems to be widely accepted, and presumably has a neutral wording, there are strong variations about both the meaning of environmental security and the method(s) of achieving it.

We could take Harold Laswell’s famous question as a starting point to examine diverse frameworks studying environment-security connection. He simply asked “who gets what, when, how?”[8] For our purpose, we could appropriate this question as “what/who is to be secured, how, and why?” According to Richard Matthew, regarding the link of environment and security, four main paradigms are discernible. First, “deep ecology” focuses on the security of the entire planet. Thus, the unit of analysis is the entire planet. In this regard, humankind is only one of species living on Earth. Nothing more, nothing less. Thus, the essence of this paradigm is the well-being of the planet. As the Earth remains healthy, so would be the humanity. Second, “human security paradigm” takes the issue of reasonable and sustainable access of all humankind to healthy environment as the utmost priority.

This approach tries to balance the demands of modern life and the environmental concerns. Third, “national environmental security” comes. According to this framework, “greening of military”, environmental conflict resolution, dealing with environmentally stressed areas and using military- if deemed necessary- constitute major methods and steps to overcome national and international environmental security issues. Finally, “rejectionists” entirely oppose to link the environment with security. [9] This line of argument will be dealt below in detail.

Discontent with the Cold-War thinking or with the “geopolitical period” became widespread in environmental security literature soon after the fall of the Berlin Wall. Jeremy Rifkin aptly revealed that “it is the notion of security upon which our entire modern worldview is based that has led to the verge of ecocide”. He complained that the geopolitical considerations of twentieth century resulted in the probability of a disastrous nuclear war accompanied with an environmental catastrophe. [10] This was a restatement of the “security dilemma” with the incorporation of the environment. In the same vein, Mendlowitz and Walker concluded that states appeared to be endangering the very populations that they were supposedly protecting



precisely by trying to ensure national security. [11] Yet, the geopolitical assumptions of the Cold-War era did not disappear so suddenly. In 1994, Robert Kaplan's famous article "The Coming Anarchy" was announcing that the environment was the national security issue of twenty-first century. [12] On the whole, Kaplan argues that, if left unchecked, population increases, urbanization due to environmental degradation, and resource depletion could undermine fragile governments across the developing world resulting in social disintegration and ethnic conflicts and represent a threat to the developed world. In this study, he proposed an example signifying the differences between the North and the South:

The rich in a limousine driving through the potholed streets of New York while the rest of the population outside the automobile is going the other way, most probably on foot. [13] Kaplan calls this the "bifurcated world"[14], a world divided into zones of peace and turmoil[15], or into "wild" and "tame" zones [16].

One of the mostly cited studies regarding the environment and international security is of Thomas Homer-Dixon and his colleagues', or "Toronto Group's". Homer-Dixon took the "environmental scarcity" as the independent variable and examined its possible link with the international security. As his studies are more complex and extensive than this paper's scope, it is only aimed here to outline the main conclusions that Homer-Dixon reached. He very roughly argued that environmental scarcity could cause persistent, low intensity conflict, in particular within states. This type of conflict could wear down governments resulting in fragmentation and failure of states or more authoritarianism. Although his studies are being criticized on various grounds[17], it is still the case that they attracted a great deal of academic interest into the subject and re-vitalized a debate between those thinking of environment as a serious threat to international security with those denying the security threatening nature of environment.

The securitization of environmental concerns certainly generated numerous critics. As a generic dissatisfaction with the supposed intimacy between the security and the environment, it was argued that whereas the distinction between friend (us) and enemy (threatening "them") was fundamental to the concept of security, environmental politics does not easily fit into this type of thinking and practice. On this discussion, again, the question "what is to be secured?" becomes to the forefront. Through the lenses of the North, as Robert Kaplan elucidated, the danger is seen as the environmental problems originating in the developing world and their impact on the prosperous North. On this issue, Dalby warns about the possibility of a "globalist managerialism" through which the North, using environmental problems emanating in the Third World as a kind of pretext for intervention, could try to control the South basically for continuation of secure resource supplies to the developed world.[18] In other words, the environmental security could become a new tool for the North to sustain unequal relations between the enjoying core and the suffering periphery. Therefore, the Southern critics to the environment-security nexus should also be taken into consideration for a more balanced understanding. In this way, "us versus them" dichotomy of the classical security conception could be transcended towards a new agenda within which matters of equity and justice would also be taken seriously.



Daniel Deudney is one of the leading critics of environment-security intimacy. Deudney makes three bold claims against the case for thinking environmental issues in terms of security. Firstly, it is analytically misleading to link environment and security. There is nothing in common. Both the scope and sources of environmental treats and of threats to national security is quite different. The struggle with environmental threats is not and cannot be the moral equivalent of the concept of war. Secondly, taking environmental issues with a national security focus could be counterproductive. Because, it can lead to the “militarization of the environment”, which in turn, can impede international cooperation, can bring environment into zero-sum assumptions, and can pull environmental matters into short-term horizons of classical security politics. Finally, Deudney asserts that environmental degradation does not lead to war. Mattias Finger, Simon Dalby, Michale Dalby, Marc Levy and Ken Conca are also among significant critics of securitization discourse. It is argued here

that this debate between those securitizing the environment and those opposing it have provided a firm ground for the eradication of the invisible but strong enmity between the discipline of IR and the environment. As there is no royal road to a theory of an environmentally secure world, it would be the richness of ideas most contributing to the construction of a better future.

6. CONCLUSION: A SEARCH FOR A NEW DIRECTION?

Simon Dalby argues “once the natural environment is taken seriously as a security theme, the conventional assumptions about states as the containers of political community can no longer be taken for granted.”[19] However, state-centrism, what Dalby called the “ontological limitations of IR” is something to attribute only to state-centric theories of IR, in particular realism and its variants, not the entire IR. Newer theoretical approaches in IR are characterized by their challenge to central position of state in world politics. Thus, the compatibility of IR with issues of environmental security remains to be a prolific area for research.

In 1996, Porter and Brown concluded that the environment has appeared as the third main element of discussion following the international security and global economics. [20] By 2000s, the environment has transferred itself from periphery to the centre in IR theorizing in parallel with the realities pushing for its ascendancy. This paper argues that one of the reasons behind the transfer of environmental issues to the mainstream IR is the stimulant effect of the debate between those argue for securitization of environment and those disagree.

Andrew Hurrell contended that as environmental issues cut across national as well as administrative boundaries, traditional theories have insufficient explanatory powers.[21] In a similar fashion, it is maintained that the turbulent period of early 21st century which includes few successes and many failures of international cooperation, causing deep suspicions about the fate of the Planet Earth (ozone depletion and Antarctica for the former, Kyoto Protocol, deforestation, etc. for the latter), will probably end up with a fresh new approach transcending all the frameworks ranging from state-centrism to decentralized anarchism, and handling better, both the linkages between the IR and the Environment, and the management of the global environment itself.



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[17], On the grounds that there were not enough evidence, that while conflict is an exception, cooperation is more rampant, that there were no historical assessments of the conflicts, that considering broader international system there are structural forces hindering or escalating conflict.

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UNSUSTAINABILITY: THE CHALLENGE CONFRONTING “MIDDLE EASTERNERS”

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At this International Conference on “The Environment: Survival and Sustainability” I ask permission to speak not as an Israeli national but as a “Middle Easterner”. A permanent resident in this elusive part of the world stretching from the eastern Mediterranean to the Persian Gulf, who confesses to a sense of trepidation about our collective prospects -- as “Middle Easterners” -- to preserve our independent regional status and viability, let alone to keep pace with global economic expansion.

The statistical evidence for our downward trajectory is uncontestable. Inhabitants of the Middle East are being steadily debilitated -- yearly, monthly, daily -- by a barrage of region-wide scourges. To name but the most threatening: severe resource depletion and environmental disaster, water scarcity and desertification, economic underdevelopment and demographic pressures, social, scientific and educational stagnation, internal strife and external intervention, conventional arms races and nuclearization.

Although one can list any number of contributing factors and attenuating circumstances, these are merely excuses. The principal cause needs to be stated, courageously and in all candor. Our rapid regional regression is precisely because, unlike Europeans and Asians, in our narrow parochialism we have not yet really begun to grasp the magnitude of the threats on our horizon, nor to even begin perceiving of ourselves as “Middle Easterners”. Let alone to give this alternative form of supranational allegiance even the most rudimentary institutional or operational expression.

Ironically, we Arabs, Iranians, Israelis and Turks -- destined to live in the geographically broad, indeterminate ecosystem known as “the Middle East” or *Shark al-Awsat* -- have long since succumbed to this artificial and forced Western convention. But we have not even started the educational process of perceiving of ourselves, let alone to organize ourselves, as “Middle Easterners”. The name “Middle East” aside, there is no regional institution to give it tangible expression whose doors are open to all member states comprising the region. We are, in effect, a depressing variation of Benedict Anderson’s classic notion of an “imagined community” still waiting to be invented. Still more important: to be institutionalized. Making us an anomaly -- an unregionalized, unrealized region. An idea, a concept, a passport, a larger environmental-socioeconomic-political framework whose time, tragically, has yet to come.

But because of our region's widening twin ecological and developmental gaps Time is precisely the luxury, the commodity we Middle Easterners do not possess! In today’s world, diversity is a virtue, regional disunity an economic, strategic and political liability of colossal proportions. Therefore, the thrust of my policy-related paper is on the imperative for considering possible constructive frameworks, however modest, for promoting functional cooperation and mutual self-help regimes at even the most limited, rudimentary levels.



In advocating urgent, practical steps at environmental damage control this paper challenges prevailing conventional wisdom. The dominant school of thought continues to insist upon the resolution of political differences and outstanding conflicts as the indispensable first prerequisite before then proceeding on to interstate, sub-regional and regional-wide collective efforts at addressing environmental threats. Such thinking becomes increasingly untenable not only because most of the region's political conflicts are so deep-seated, complex and intractable, requiring diplomatic patience, ingenuity and ripeness, but because Middle Eastern declinism, highlighted in the human and environmental realm, has accelerated so alarmingly in recent decades, evoking the cautionary: "United we stand, divided we fall".

Therefore, the thrust of my presentation – beyond sounding the alarm itself and a wake-up call to all Middle Easterners – is neither preaching nor lecturing but policy advocacy, suggesting tangible, modest "win-win" steps for confronting our shared environmental agenda even while pursuing parallel conflict resolution efforts. Inspiration derives from: (1) the sheer urgency of the Middle East situation, (2) David Mitrany's creative approach of Functionalism, (3) the weight of evidence from other geographic areas and cultural regions that until recently were considered underdeveloped and pre-industrialized, confirming regional association has its definite advantages, (4) the 1991 Madrid formula of Middle Eastern multilateralism and (5) the Euro-Mediterranean Partnership or Barcelona Process, already in place, providing a useful framework for environmental action between the 25 EU Member States and 10 Partners of the Southern Mediterranean (Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestinian Authority, Syria, Tunisia and Turkey).

The last time "the Near or Middle East" possessed cohesiveness was in 1919! For nearly four centuries after the seizure of Constantinople in 1453 unity in the lands of the "Musselmen" was marked by a single allegiance: to the Turkish *sultan-khalif*; one central address and authority: "the Sublime Porte". Dismemberment of the Ottoman Empire has produced instead a cluster of small, parochial, weak and warring successor states. In effect, the dominant pattern characterizing the peoples and politics of the Middle East in modern times is fragmentation. "From one, many".

Half a millennium ago, Portugal's Vasco da Gama discovered an alternative all-water passage to India and the Orient via the Cape of Good Hope whose larger effect -- by diverting Europe's lucrative spice trade from the traditional Mediterranean and overland caravan routes -- was to transform the Levant from a leading center of commerce to an economic, political and cultural backwater.

Complacency and failure then -- in 1498 -- to respond effectively to a major transforming crisis, in the early sixteenth century, has cost inhabitants of the region dearly. Indeed, it has taken until the present era for the Middle East as a whole to recover its lost pride, former economic and geo-strategic prominence, and political independence. ... Except that now, in this post-Cold War moment of renewed Middle East opportunity and potential, History, the Balance of Power, the Integrationist model and Globalization threaten once again to leave all of us in this disunited region far behind.



In his Newman Lecture at University College, Dublin, in 2002, E.U. External Relations Commissioner Chris Patten noted: "In the modern world, nations need to pool their sovereignty to deal with problems that extend beyond national boundaries". He then went on to boast: "The European Union is the most advanced and successful experiment of that kind", adding: "But the principle, I believe, has universal application". Judging from our present behavior, we "Middle Easterners" strongly beg to differ.

Borrowing from a character in The General in His Labyrinth by Gabriel Garcia Marquez, we "Middle Easterners" do seem to be insisting: "Let us have our Dark Ages in peace"!! ... The question I risk posing to my co-regionalists is: How can we knowingly go on being indifferent to the mounting, prohibitive costs? Especially when the statistical evidence is so overwhelming ... and so alarming.

The United Nations Development Program has so far released three successive Arab Human Development Reports. These reports are especially significant since they are compiled "by Arabs for Arabs" -- by experts from inside the region rather than by non-Middle Easterners.

- The first report, issued in 2002, focuses on the poor state of human resource development, and challenges the Arab world to overcome the obstacles posed by widening gaps in freedom, women's empowerment and knowledge across the region.
- The second report, issued in 2003, addresses the poor state of education and science. This report highlights the gravity and urgency of the plight by warning that the overall knowledge gap continues to grow.
- The most recent report, issued in 2004, "Towards Freedom in the Arab World", follows up the two previous reports by emphasizing the region's poor record on freedom and governance. "At the regional level", the panel of social scientists conclude, "current institutional arrangements for regional co-ordination have failed to give substantive support to Arab development, and to maintain security and peace in the Arab world".

Particularly austere are economic time studies and aggregate data graphically showing that global growth trends during the 1990's have not extended to the Middle East. Instead, the Middle East consistently scores poorly on the major indices of international economic performance, making it a net deficit region.

- Most countries in the region show low, even negative real gross domestic product (GDP) per capita growth rates over the last three decades. Iran at -16 per cent, Kuwait at -30 per cent, Saudi Arabia at -31 per cent and the United Arab Emirates (UAE), a shocking -105 per cent.
- Thirty to forty years ago key Middle East and North African nations were on an economic par with Asian countries. No longer. While Egypt's per capita income in the 1950's was similar to South Korea, today it is less than one-fifth of South Korea's. Morocco's GDP was close to Malaysia's; now it is one-third. Then Saudi Arabia had a higher GDP than Taiwan; today it is only something like 50 per cent of Taiwan's.



- The cumulative GDP of the 22 Arab countries, with a population of 280 million people, is less than that of Spain ... and only half that of the United Kingdom or France.
- Total non-oil exports from the entire Middle East and North Africa (MENA) only manage to equal Finland's total exports.
- The MENA region continues to maintain the highest annual population growth rate in the world.
- Illiteracy runs at close to 40 percent across the region, triple that of Latin America and East Asia.
- A full 25 percent of Arabs live below the poverty line. One of every five Arabs lives on less than \$2 a day.
- Only approximately 11 per cent of the labor force works in manufacturing.
- Only 1.6 per cent of the population has Internet access; and while the world average in computerization is 78.3 computers per 1,000 persons, the level in the Arab countries is 18 computers per 1,000.

Yet between 1975 and 2000, aggregate revenue from Middle Eastern oil exports exceeded \$2.3 trillion. Meaning that unlike other developing countries there is no shortage of "home-grown" capital in the Middle East in order to finance economic development.

- Except that at present an estimated \$1.3 trillion in Arab private capital are invested abroad, rather than in the region.
- Private sector participation in infrastructure is particularly low. Between 1984 and 1997, projects in the region added up to only \$9 billion compared to a worldwide total of \$650 billion -- a share of just 1.4 percent.
- In 2004 foreign direct investment (FDI) rose everywhere except the Middle East. Of total FDI worldwide amounting to \$900 billion in 1999, Israel aside, the region attracted only about \$8 billion, or 1 per cent of world FDI.



Indicative of a region still motivated by separatism, by suspicion and by self-help are its misdirected energies and priorities.

- The Middle East has the highest ratio of people under arms: 10.3 per 1,000 people in comparison to the world average of 3.6 per 1,000.
- Military expenditures for the region exceed 21 per cent of government budgets. By contrast, the average for developed countries is below 10 per cent ... and for developing countries around 14.5 per cent. In 2002 at least four countries classified as low- and middle-income (Saudi Arabia, Jordan, Syria, Turkey) spent more on military budgets than on education or health.
- In 2003 the Middle East poured some \$70 billion into defense.
- According to authoritative SIPRI data, world military expenditure may have increased by 18 per cent in the years 1994-2003, but that of the Middle East jumped by 48 per cent. This figure was higher than for any other region, and exceeded that of Africa and the Americas combined.
- Collectively, and over the last 10 years, the annual average of military expenditure by Middle Eastern countries totals some \$15 billion per annum.
- Arms constitute approximately 14 1/2 per cent of all Middle East imports, versus a 1 per cent average worldwide.

Small wonder that of all Middle East countries the U.N.'s July 2004 Human Development Index ranking the best countries to live in in terms of per-capita income, educational levels, health care, and life expectancy, Israel is listed in only 22nd place, with Bahrain, ranked 40th, next.

The point behind this array of dismal statistics should be patently clear. As Middle Easterners, we are threatened -- all of us -- by atrophy, and by resource depletion. First and foremost, in our human resources. Talents suppressed and untapped. Lives callously snuffed out by incessant regional strife and bloodletting.

So, too, are we squandering the region's two other prized "liquid" resources: water and oil. A World Bank report notes, for example, that the Middle East and North Africa suffer the world's lowest rate of net renewable water supplies. Barring preliminary steps toward a Mideast water regime and pooling of water resources, desertification is winning in the timeless struggle between the desert and the sown. Today the desert covers 60 per cent of Israel, 70 per cent of Syria, 85 per cent of Jordan, and 90 per cent of Egypt.

With statistics painting a picture of absolute as well as comparative decline, the writing is on the wall. The Middle East has been the world's poorest economic performing region for the last 25 years. In which case, Is the Middle East again reverting, as in 1498, to an economic and cultural backwater?



As Middle Easterners we may verbally object to being dictated to by others. Nevertheless, whether reflected in the occupation and attempted political reconstitution of Iraq by the United States, or in Israeli-Palestinian conflict resolution, through our own narrowness and shortsightedness -- by default, as it were -- we are, in effect, abetting, indeed, inviting dictation from outside and beyond the region.

- Can it be that on the Middle East's "eastern front" the only prospect for bestowing freedom upon the people of Iraq comes through the armed intervention, commitment, and approval -- and only through the armed intervention, commitment, and approval - of a foreign power?
- Similarly, on the Middle East's "western front": Must it be that an imposing international presence offers the last ... and only ... hope for achieving coexistence between Arabs and Israelis?

Nationalist denials and diplomatic protocol aside, this timeless attribute of the Middle East -- its vulnerability and intrusiveness -- persists into the 21st century. Once again our destiny and that of the region "at large" are influenced by, and to a considerable extent determined by, non-Middle Easterners. Given the absence of appropriate cross-border mechanisms for consultation, coordination and cooperation, our security needs are filled by others. Our economic resources exploited by others. Cultures disparaged by others. Government and regime types graded (and usually downgraded) by others. Agendas set by others. Options circumscribed by others. Even our painful compromises, road maps and reconciliation processes are not only facilitated but, in effect, defined, directed and monitored by others.

In short, combined political-economic indicators and trends call to mind a linked parallel process -- already well advanced -- of individual state disempowerment translating into collective regional disempowerment. And principally because we Middle Easterners are permitting, in fact inviting this to happen.

Were those of us in and of the fragmented Middle East to actually dare to look into the mirror of political reality, we would need to recognize that what continues to consume us (literally and figuratively) are deviant forms of political and foreign policy behavior. Surely one of the most pernicious is the Politics of Victimization. A second are the hateful Politics of Resentment and Blame and Revenge. Underlying both is the consuming sense of self-righteousness. Whether observing Shiites, Sunni or Kurds in Iraq or Israelis and Palestinians in "the mother of all 'hurting stalemates'" the impression oftentimes given is of fierce adversaries who will no longer be content, in the former, with power-sharing, or, in the latter, with a just and lasting peace modeled on the "two states" formula.

If aggressively settling scores is one recognizable Middle Eastern pathology, closely related and no less pernicious is the tendency both in interstate relations and in domestic politics to subvert prospective, mutual gains to past communal losses, or historic ethnic grievances.



Absent the two cardinal prerequisites for regionalism -- rationality, and a basic willingness to compromise -- and all the incentives or sweeteners that tend to work elsewhere have little appeal for Middle Easterners. This holds true whether for reconciliation and nation-building in Iraq, conflict termination among Arabs and Israelis, peacemaking in the Persian Gulf, or regional problem solving.

What makes discussion of Middle Eastern regionalism so eerie is the studied silence, the equanimity with which this Middle East reality of fragmentation, decline, impoverishment and disempowerment is being met. To be sure, by mortgaging our common future to a divisive past, we, its inhabitants, have done nothing -- certainly nothing positive -- to give the Middle East substance and real meaning. Or to give our people hope.

The question for us Middle Easterners is, should "Middle East" mean something other than just an arbitrary geographic description? Where is the introspection, the vocal self-criticism, so essential if we are to look introspectively for the real causes of our malaise? Where are those within the region with the insight and the foresight to sound the alarm? Where the enlightened political reformers, indigenous democratizers and religious moderates? The pragmatists, the bridgers and accommodationists, the unifiers and the integrationists? Those who, while respecting diversity, might be capable of rising above national partisanship and at least begin to perceive of themselves and of others as "Middle Easterners"?

The relentless pursuit of unilateralist policies by independent-minded regional actors not only remains an embarrassment but also extorts huge opportunity costs from defying the global trend toward integration. By the same token, the weakness deriving from the combined lack of an integrated response to any regional issue and the absence of any regionalist paradigm -- whether you call it a "system", a "regime" a "framework" or an "umbrella" organization -- only encourages by default the meddling and interference of Middle East outsiders only too willing to press upon us blueprints of their own design.

Yet please understand.

- Unless voluntary, and indigenous, none of the deep social, economic and political reforms, extended road maps, or Greater and Broader Middle East Initiatives can be promoted from outside, nor gain acceptance from Middle East insiders;
- In the same manner, the danger is that, objectively, the highest regional priority may actually require the lowest common denominator. Arguably, of greater immediacy than liberal democracy are emergency steps aimed at achieving a minimum shared ground in the Middle East. I repeat: minimum shared ground. Nothing on so grand a scale as "The New Middle East" outline, prematurely sketched by Shimon Peres in the heady days of the 1993 Oslo Accords, with its visionary call for open borders, regional planning, economic integration and the like.



It is folly to make light of the anti-regionalist constraints. On the other hand, even in the face of these deterrents a start must be made. For jointness to gain acceptance we will need to set our sights lower, considerably lower. In fact, at ground zero, where basic intra-regional skills for communication, consultation, coordination and coexistence have yet to be fostered; and where strictly functional, remedial measures are still called for. Voluntary and non-coercive measures. Measures based on the authentic needs of the region and respecting its special conditions. Measures anchored not in an altruism of “love thy neighbor” but in the calculus of each regional member country’s own self-interest. Self-interest that is non-zero sum, that permits for “win-win” outcomes through accommodation.

As proved by the post-World War II experience in Europe, the ability of neighboring countries with a history of enmity to compartmentalize is one of the keys in the functionalist approach to gradual transnational, regionalist cooperation. Here prudence calls for appealing to arguments of national self-interest, rather than dismissing them. In this category are intergovernmental pilot projects aimed at crisis prevention and response, at arresting economic and environmental decline, and those that stand a real chance of producing short-term, tangible, possibly even dramatic results.

Despite the urgency, great care must be taken in how Middle Easternism is promoted. Precisely because so much is at stake. Clearly, there is a wrong way and a right way in building regionalism’s architectural scaffolding. The right way toward change and growth makes only two requirements: (1) that the initiatives be homegrown -- of and by Middle Easterners; (2) that membership be inclusive, not exclusionary.

The Arab League, established in 1945, is a good example of an indigenous body but one whose qualifications for joining are restrictive. References in recent years to an “Arab order” or to an “Arab system” and calls for an Arab Common Market by 2015 suffer from the same liability of leaving non-Arab but major regional actors like Iran, Israel and Turkey entirely outside.

In a special category is the role of Europe and of the United States in promoting the otherwise desirable idea of regional cooperation. Although more induced from outside than generated from within, the Euro-Mediterranean Partnership sponsored by the European Commission is a positive step in the right direction because of its efforts at greater comprehensiveness. Its MEDA programs specifically seek to “complement and reinforce” bilateral projects; while the Barcelona Process, created in 1995, works to tackle issues that have a transnational dimension by promoting closer integration between the 27 members (15 EU Member States and the 12 Mediterranean Partners). On the same order is the Middle East Regional Cooperation Program (MERC) by the United States Agency for International Development (AID). Its goal is “To contribute to development and improvement of the quality of life” in the “Middle East Region” through the application of research and technology, with eligibility for funding explicitly stipulating that “Only proposals developed jointly by Arab and Israeli institutions are accepted”.



Conversely, failing the two-fold test are European and American initiatives that, in addition to the drawback of being pressed upon Middle Easterners by foreigners (and by Western foreigners whose motives are regarded with a degree of suspicion), seek to avoid confrontation by explaining away the non-invitation and non-inclusion, possibly of Iran and perhaps even Turkey, but especially of Israel. In this context, concern is aroused, for example, by the present thrust of the Middle East Free Trade Area Initiative (MEFTA) launched by the United States in 2003 as part of President George W. Bush's Middle East Partnership Initiative subsequently amended to the "Greater", then "Broader" Middle East, and finally still more encompassing BMENA (Broader Middle East and North Africa) initiatives.

The stated goals are altogether commendable: transforming the Middle East and bringing it into an expanding circle of opportunity -- by joining those in the region determined to seek genuine progress toward greater democracy, tolerance, prosperity and freedom; by tearing down walls of prejudice, poverty and protectionism; by encouraging a region-wide commitment to open trade with the United States; and, equally important: a pledge to free trade among the nations of the Middle East.

Except that in the face of Arab political objections and suspension of the 1993 Oslo peace process between Israel and the Palestinian Authority, current policy has been revised, if not reversed. Country FTAs now under discussion with Egypt and already negotiated, respectively, with Bahrain, Israel, Jordan and Morocco, were intended to be pursuant to the comprehensive U.S.-Middle East FTA. Instead, these bilateral accords now risk becoming a substitute for the more ambitious MEFTA partnership.

Making due with bilateral FTAs instead of with the region as a whole in a super-regional initiative represents a serious departure from an American free trade strategy of multilateralism and regionalism -- as witnessed in NAFTA, FTAA (the Free Trade Area of the Americas), CAFTA (Central American Free Trade Agreement), APEC (the Asia Pacific Economic Cooperation forum). A string of separate bilateral pacts, even when spliced together to convey a false impression of jointness, in no way constitutes or inspires economic integration; not even rudimentary interdependence. No less important: regionalism and regionalization in the Middle East simply cannot be bought at the price of any country's forced exclusion. To talk of a Middle East Free Trade Area as part of a "Greater" and "Broader" Middle East while at the same time consenting to bar from membership any country which might otherwise wish to participate would not only be a contradiction in terms but self-defeating and the height of cynicism.

Rather, political differences among Middle East countries must be acknowledged, confronted and overcome in the name of common ecological and economic survival. That this community of urgent interests might yet be formed before it becomes too late is encouraged by an earlier positive experiment under the 1991 Madrid process which succeeded in establishing a multilateral track wherein Israel, regional Arab states and other states outside the region met together over the course of several months to address five key functional issues of common, immediate concern: water, environment, arms control, refugees and economic development. One concrete proposal for making a start toward genuine Middle Easternism would be to press for reconvening these suspended workshops, and as quickly as possible.



No one has framed the choices more starkly than Prince Hassan bin Talal of Jordan. He cautions that in this troubled part of the world the options fall, quite simply, “between regionalism and barbarism”. On the assumption that hope and potential still exist for the Middle East, sustainable future growth requires a two-pronged strategy. One front centers, to be sure, on reforming and modernizing social, political and economic systems in each country; the other front, though, calls for joint efforts on a broader scale.

Middle Eastern regionalization, as defined in this paper, really means generating a regional consciousness -- a slow yet demonstrable change of hearts, minds, and identities. It means learning protocols for cooperation and multilateralism. It means spreading confidence-building, not conflict. It means substituting bloc politics for blocking politics, and urgency for complacency and self-conceit. Otherwise, without immediate steps toward progress at Middle Easternization, we are all facing a disaster of historic proportions ... on the scale of 1498. Failure to avert stagnation yet again becomes a mega- mistake of historic proportions.

Why? Precisely because even at this twelfth hour a “Middle East” is sustainable. We of the region possess both the human and the physical resources to compete, to progress, to surmount ecological and environmental adversities, and, yes, to determine our own common destiny. Whereas the present course of narrow parochialism, spitefulness and bloodletting guarantees us our very own Dark Age, whose duration and depths and devastating costs we cannot possibly even begin to comprehend. Instead of recognizing the Middle East -- *Shark al-Awsat* -- as a valid identity and, indeed, an immediate imperative, we will, together, have conspired to suppress and to demean it.

Should progressive “Middle Easternism be arrested at the stage of an imagined community, and nothing more, then our shared responsibility for not acting in time, and in concert, will serve for all eternity as the ultimate proof of what we, today, stubbornly refuse to acknowledge: our commonality; our regional oneness.

PROCEEDINGS

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SUSTAINABLE COMMUNITIES: PRESCRIPTIONS AND ILLUSIONS

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When I first browsed the “EES” call for papers, I was stunned to find the term “sustainable development” being celebrated ... once more! The term has certainly been the buzzword of the era, and the most burgeoning concept at different levels and arenas. The idea for this presentation came gradually after some careful reading into this conference pamphlet. The paper we are about to explore is not about advances and triumphs of a specific branch of science or technology, it is more about epistemology and methodology. Different professional bodies already have their checklists for “sustainable practices” and the planning and development community is not an exception. We have our own prescriptions: How to start your sustainable community; the way to a sustainable living; and so forth. However, this plethora of publications might not always be a positive addition to knowledge.

The main objective of this research is exploration. Through a multiple case study, we will be exposed to a selection of ideas, and to what people and literature call sustainable communities. Hopefully, this process would initiate and leave a spark within urban planning profession and related fields ... some sort of stimulus for more in-depth self-questioning. Following a brief contextualization, the term “sustainable communities” will be introduced and elaborated on. Some methodological arguments will be delivered in accord with the presented case studies. Thematic analysis for qualitative data at hand should bring some structure and better understanding to the current scene. A typology for sustainable communities is offered and some new terrain is being highlighted. Finally, the research concludes with a general framework for understanding sustainable communities if these were ever to exist.

Keywords: *Environmental planning, Planning theory, Research methods, Sustainable communities, Worldviews.*

INTRODUCTION

A call ... and objectives:

When I first browsed the “EES” call for papers, I was stunned to find the term “sustainable development” being celebrated ... once more! The term has certainly been the buzzword of the era, and the most burgeoning concept at different levels and arenas. When I started to explore the topic of “sustainable communities,” I was enchanted to locate an overwhelming body of related literature. The planning and development community already have checklists for “sustainable communities”: How to start your community; the way to a sustainable living; sustainable urban forms and so on.



A question then kept haunting me: Would one be relieved if this monologue comes up with “things-to-do” lists or some colorful plates and blueprints for such communities? If these checklists were ever to exist -and they really do in literature, would one be confident of resolving the current man-nature divide?

I started the journey with the intention of exploring the dimensions and prospects for a so-called “sustainable community.” However, deep in myself, I have had the feeling that efforts should be invested more in restructuring our thought and the paradigms that govern our lives and professions than in producing lists and blueprints. Through a multiple case study approach, this paper intends to present such an argument and initiate more in-depth self-questioning.

Following a brief encounter with the current scene at both local and global levels, the term sustainable community is being explored. Some methodology-related issues are elaborated on. Then, case studies are presented, followed by discussion that brings some order and structure to our journey. Finally, the research concludes with a general framework for understanding sustainable communities if these were ever to exist.

An evil scene!

As we are heading through the Twenty First century, we are facing a whole series of global problems. These range from the greenhouse effect, global warming, pollution and the loss of biodiversity to more micro-scale problems related to specific human settlements. From UNCHS (Habitat’s) point of view, the world could be viewed as a single human settlements system. This encompasses individual settlements of every size and the infrastructure networks that support these settlements.

As for urban development patterns, those followed in “Developed” countries over the last few centuries are not likely to be sustained in the third world. Confidently, one could say that virtually, all cities have problems related with congestion, pollution, lack of affordable housing and cancerous growth of blighted districts. Although problems in Developed countries are mainly related to quality of urban life, those in Third World cities are often questions of life and death (Shamsul Haque, 2000).

The overall impact of such urban growth on the natural environment is, and will continue to be, far-reaching. Either this can recognize the limits of the natural environment, or it can destroy the resources on which current and future generations depend; it can meet people’s needs equitably, or it can enrich some while impoverishing or endangering others (Lowe, 1992). At a more humanitarian micro level, many paradoxes characterize the current reality. For instance, while everything is going global, individual isolation grows; while wealth increases, extreme poverty also increases; while science and technology offer incredible opportunities for survival, the risk of humankind’s extermination looms larger and larger.



One of the consequences of the growing global capitalism is social degradation that is represented by social inclusion and exclusion. This relates to poverty of not being a citizen, poverty related to the impossibility of being part of a city and of making choices; poverty due to lack of freedom, or to the restrictions of the space of choices available to everybody (Friedmann, 1992, Wieslaw, 2001). Briefly, agony of work, lack of social communication, and rugged individualism, where “I” is heard loudly at the expense of “we,” are all indispensable features of the postmodern society. These have led to a decline in what political scientists call “social capital.” (Putnam, 1995).

SUSTAINABLE COMMUNITIES: SATIN OR SAVOIR?

Global and local fears of catastrophes have furnished solid ground for calls of emancipation. Although a plethora of ideas for finding ways to a better future are available in all arenas

through conventions, publications, and other formal and informal forums, “sustainable communities” concept is the most intriguing on the arena.

Methodologically, one would be impaired if he or she is to proceed with an argument without raising issues of construct validity, i.e., how would one define the variable of interest, here it is “sustainable communities.” Dealing with sustainability in particular is much more problematic because there is no single agreed on definition for the term (Lele, 1991, Redclift, 1992 and others). Going further and attaching the term “community” to “sustainability puts us face to face with real methodological troubles. Starting with a loose definition certainly reflects negatively on the credibility of any argument within this specific field. To deal with the concept of “sustainable communities,” one might start to break it down into two separate terms: “sustainable” and “community,” define each, and then search for links whenever possible. The following section will elaborate on these issues.

Sustainability and sustainable development:

The original use of the term “sustainability” occurred among scientists studying strategies to ensure the proper use over time of specific natural resources such as fish, water, trees, and so on forth (Aguirre (2002).

As for urban planning profession, several phases could be identified regarding western approaches to environmental concerns. From the early sixties with its environmental upheavals and perils, growth management concepts evolved coupled with strategies for enabling economic and technological modernization. During the last two decades, ecology has replaced amenity as the focus of public debate (Healy, 1993). Recently, sustainability became a viable alternative to economic development. In 1989, the term gained more momentum through publicity in the Brundtland report that defined it as meeting the needs of the present generation without comprising the needs of future generations (Brundtland, 1989). Despite the widespread acknowledgement of the ecological and social symptoms of our problems, interpretations of sustainable development and its implications have been contradictory. Some refer that to the term itself, which is treacherously ambiguous (Lele, 1991). Others claim that the various interpretations of sustainable development are caused not by poor understanding, but rather by ideological differences and reluctance of many to acknowledge the implications of the underlying message.



The deliberate vagueness of the concept is a reflection of power politics and political bargaining on the global and local scenes (Redclift, 1992). This has simply lead to two possible interpretations to sustainability, “hard” or more radical aiming at ecological and social transformation and justice (Friedmann, 1992) and “soft,” looking at more sensitive growth.

Communities and images:

“(Community) like electricity ... is profoundly lawful. Yet there remains something about it that is inherently mysterious, miraculous, unfathomable. Thus, there is no adequate one-sentence definition of genuine community. Community is something more than the sum of its parts, its individual members.” (Peck, 1991).

Following Merriam Webster’s Collegiate Dictionary, an image is an illusory form, a mental picture of something not actually present, or simply a mental conception held in common by members of a group and symbolic of a basic attitude and orientation. The collectivity of holding a specific image, with some possible qualifications, is what really interests us. There could be one or more images held either in common, or by individuals within a group. These might complement each other, where each member holds a piece that fits into the larger image or version for the destined community. One creates his or her own image of community from his own experience, expectations, and/ or group vision for a future life (Cooper and Rodman, 1992).

Peck (1991) states “Community can be one of those words –like God, or love, or death, or consciousness—that’s too large to submit to any single, brief definition”. However, there is something nearly irresistible about defining community in terms of space. In Tonnies’, the German sociologist’s words, “Gemeinschaft” has been translated into community, as a natural grouping of people based on kinship and neighborhood, shared culture and folkways (Daly and Cobb, 1994). Others like Perry (1987) and Norwood (1995) assert these claims of territorial communities. Many even believe that a place-based model for community holds the best hope for creating a sustainable and healthy society (Daly and Cobb, 1994, Friedmann, 1992, Keller, in McCleery, 1995 and Kemmis, 1990). Beside this geographical dimension, cultural, psychological, social, and institutional dimensions have been suggested as prerequisites for a healthy community. To be more specific, Bellah (1988) identified community with four main characteristics: common territory, common history and shared values, participation in common activities, and a high degree of solidarity.

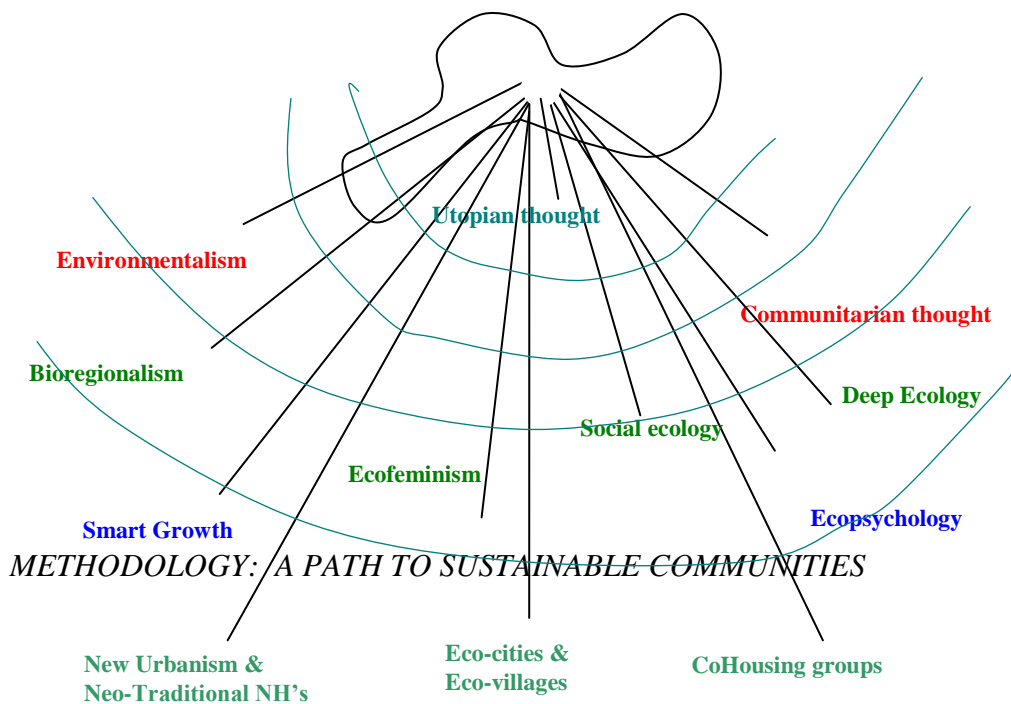
On contrary, there is another perspective that builds on these dimensions and transcends the limits of place. This is Warren’s “ecological paradigm.” He rejects the concept of community as a geographical box in which people live and function. For him, community is more than a collective entity, rather an aggregate of the clustered interaction of people and organizations within a geographic area Warren (1988). This approach concerns itself with the systematic ways in which people and organizations interact within and across sectors of community concern.



A third, and a somewhat interesting image is what Cooper (1992) called the “new age” community. Within this image and for true communities to grow, individuals that make them must undergo profound change. They must achieve a transcendence of self that one associates almost with Buddhist ideals.

Combining the multiple possible interpretations of both sustainability and community brings us to unlimited possibilities of what could be called a “sustainable community.”

Fig (1): Sampling frame: layers of footprints and consonant schools of thought.



Research method:

Literature indicates two distinct though opposing lines of thought. The first raises the banner of objectivity, and professionalism: “we know the facts and have the solution!” This motto is reflected in publications that deal with sustainable communities from a deterministic perspective, where certain steps should certainly lead to more of a predictable sustainable outcome. These mainly utilize quantitative methods, with emphasis on sustainability indicators and modeling. The second approach is more political and deals with issues of institutional structures, environmental justice, and equity at different levels (global, regional, and local). This type of research mostly follows qualitative approaches. Because of the exploratory nature of the paper at hand, a qualitative multiple case study design is adopted. It relies on secondary data available through literature.



External validity and case selection:

External validity refers to the extent of which a researcher can generalize from his or her findings to other somewhat similar situations. Case study designs adhere to a sampling logic different from the conventional sampling logic relevant to statistical generalizations. This is the replication logic. Replication means that two or more cases would be included, precisely because the researcher predicts that similar results -replications- could be found (Yin, 1988). Within that sampling logic, researchers try to generalize findings to theory not to other cases. The first criterion for my case selection is that every case has to demonstrate the occurrence of exemplary outcomes and reflect strong, positive examples of the phenomenon of interest, i.e., sustainability and/ or community. Second, different cases should add to the general picture of “sustainable communities,” i.e. cases should complement each other.

The proposed sampling frame comprises schools of thought consonant with the sustainable communities’ ideal and some of their “physical footprints.” Fig (1) depicts this frame, where consonant schools of thought are pooled within different layers. Utopian thought comes first, followed by Environmentalism and Communitarian thought. These two represent a valid corner stone for sustainable communities. Although utopian and communitarian thought have their own footprints on earth, their influence is everlasting and therefore are kept at a higher level of the diagram. In the next layer some schools of thought are brought together, these might share some basic elements, such as care for the environment and the disenfranchised, the biosphere and all sorts of life on the planet. However, there are certainly differences and orientations between and within schools. The final layer presents some movements that have dominated current practices by having their own footprints on earth. These are New Urbanism and Neo-Traditional neighborhoods, Eco-cities and villages and CoHousing .

Data analysis:

On contrary to quantitative methods, where previously defined variables and measurements should be utilized, qualitative case studies are structured on open, exploratory coding of collected data (Yin, 1988). The research adopts a thematic analysis approach to analyze qualitative data at hand. In addition, analysis yields more opportunities to reach typologies of certain phenomena, thus enriching our understanding by giving order and structure to data.

SUSTAINABLE COMMUNITIES: EXPLORING THE TERRAIN

The following section exposes –briefly- some of the selected case studies, followed by discussion and elaboration on critical points relevant to the proposed objectives.

Utopian Thought:

Utopia is a mock name for either Outopia, which means “no-place,” or Eutopia, “the good place” (Mumford, 1959). All utopias are by definition, fictions. Unlike, say historical writings, they deal with possible, not actual, worlds. To this extent, they are like all forms of imaginative literature. Classic utopias have so far been nearer to reality -in essence, they have projected a whole community, living, working, mating, and spanning the gamut of man’s activity. However, their projections have been literally up in the air, since they were not contextualized (Mumford, 1959). Utopia’s value lies not in its relation to present practice but in its relation to a possible future. (Kumar, 1991).



Up to the eighteenth century, Utopia was dominated by the example of Thomas More, where the good life was to be lived in a society of equality and fellowship. These utopias reacted to emerging individualism of the age and inequalities of private property and the threats to order (Kumar, 1991).

Modern utopias, on the other hand, had their beginnings in what is called the “Renaissance and the Reformation.” This era was marked by two main changes. First, it is the limitation in the whole conception of the classic utopia. These were not just a perfect, but also a perfected society. Second, thinkers became convinced that progress was taking place and utopians’ dreams were on the point of becoming reality! Consequently, thinkers became more interested in scientific social theory than in fictional utopias (Mumford, 1959 and Kumar 1991). Examples of this trend appeared in the works of Fourier who believed in what current literature calls “architectural determinism,” (Lang, 1980) and Robert Owen, who believed in environment-behavior relationship. Their vision gave rise to the building of “intentional communities,” which followed blueprints for perfection (Friedman, 1987). This type of thought was further developed in the writings of behaviorists and found recent echo in the practice of the New Urbanism movement and its emphasis on physical form.

What unites utopians is the assumption that there is nothing in man, nature, or society that cannot be ordered. For utopians, the creation of a good society is not a political act, but rests on the force of ideas, moral persuasion, and human determination. In addition, a focal element in a utopian society is voluntarism and shared ownership.

A different type of utopias, “partisan utopias,” has been advanced in the late nineteenth and early twentieth centuries. These “partisan” utopians sought human emancipation in applying science, industry and better economic and political mechanisms. Here, visionaries paid attention to “parts” at the expense of “wholes” (Mumford, 1959).

Bioregionalism:

The concept of bioregionalism was first popularized in the mid-1970’s by Peter Berg and Raymond Dasmann of the Planet Drum Foundation, an organization founded in 1974 to pursue research on the relationship between human culture and the natural processes of the planetary biosphere (Alexander, 1990).

The central idea of bioregionalism is place. It comes from “bios,” the Greek word for life, as in “biology,” and “region,” the Latin word for “territory to be ruled.” Together they mean a “life-territory, a place defined by its life forms, its topography and its biota, rather than by human dictates, a region governed by nature, not legislature.” (Sale, 1985).

Bioregions are often organized around watersheds, and they can be nested within each other. Their boundaries are usually not rigid, and often differ from political borders around counties, states, provinces, and nations. Ideally, bioregions are places that could be largely self-sufficient in terms of food, products, and services, and would have a sustainable impact on the environment. A bioregion is about the right size for human scale organization; it is a natural framework for economic and political decentralization and self-determination (Gardner, 1989).



New Urbanism and Neo-Traditional neighborhoods:

This movement is of interest because of its latest publicity, the controversy it has raised since its beginnings, and its deep roots in architectural determinism. The movement applies the principles of urban design to regions in two ways. First, it applies urbanism, defined by its diversity, pedestrian scale, public space, and structure of bounded neighborhoods. Second, it holds that an entire region should be designed according to similar urban principles (Calthorpe, 1994).

The movement's fundamental organizing elements are the neighborhood, the district, and the corridor. The corridor links different neighborhoods through transit. At each node, exists what they call "Transit-Oriented Development" (TOD's, where we should have mixed-use developments that support pedestrian uses around transit stops. The interesting part of the story is the movement's claims for sustainability. Advocates tend to follow the principles of what has been presented earlier as a soft sustainable development approach. However, some professionals see these designs as solutions to our environmental crisis, or at least a significant part of the solution (Van Der Ryn, 1986).

The concept has received mixed critique regarding its intentions and strategies. Through historical account of neighborhood designs, data and case studies, Ivonne Audirac and Anne Shermeyen (1994) provided evidence of the biased assumptions and possible failures of the movement's concepts. One of the most important critiques is that the movement rejuvenates Leon Krier's architectural determinism, which has been challenged through different studies (Haggerty, 1982; Michelson, 1990 and 1993). Others concluded that the claims for building communities are unauthentic. On contrary, designs reinforced existing social and spatial divisions and promoted reactionary and exclusionary territorial identities (Till, 1993).

Eco-cities and villages:

The year 1975 marked the birth of "Urban Ecology" as a non-profit organization to "rebuild cities in balance with nature." Based in Berkeley, California, the organization has participated with others restore some damaged urban environments, plant and harvest trees on the streets, design and build solar greenhouses, and pass energy ordinances, and some other environment-friendly initiatives (Roseland, 1997).

Urban Ecology gained more momentum with the publication of Register's "Eco-City Berkeley," a visionary book about how Berkeley could be ecologically rebuilt over the next decades.

According to Urban Ecology, Eco-Cities should endorse the following principles: Compact, diverse, green, safe, and vital mixed-use developments; restore damaged urban environments; nurture social justice and create equal opportunities for all; support local agriculture; and increase awareness of the local environment and bioregion through activist and educational projects (Urban Ecology, 1996).

According to Roseland (1997), the eco-city concept is strongly influenced by other movements such as Appropriate Technology, community economic development, Bioregionalism, the Green movement and Social ecology.



CoHousing:

The movement began in Denmark in the late 1960's and early 1970's as an alternative to mainstream single-family housing options, and from there it spread to other parts of the world. The main principles of a CoHousing development are:

Participatory process: Where residents organize and participate in the planning and design process for the development and are responsible for all final decisions.

Intentional neighborhood design: This element reflects the need for a physical environment that encourages a strong neighborhood atmosphere.

Common facilities: The common house, which supplements the individual dwellings and provides a place for community activities, is considered the heart of a CoHousing community.

Complete resident management: Residents are usually responsible for the ongoing management of their communities. Major decisions are made at common meetings by consensus or any other technique agreed on by the group (McCamant and Durrett, 1994).

It should be recognized that these elements are subject to various changes depending on the context and dynamics of the group. Literature identifies some of these differences, especially those related to the physical form of a development.

In his account of the movement in the Pacific Northwest, Azab (1997) highlighted some possible linkages between the movement and the different meanings of sustainability. Some groups have shown interest in ecological and social justice matters beside their interest in communal lifestyles. Other groups and it is a majority identified themselves with the "soft" version of sustainable development.

GETTING THINGS TOGETHER

We have encountered a number of "sustainable communities," and some consonant schools of thought. What is interesting is that all constituents claim and stick to an ideal, mostly a "sustainable" one, and they might actually be. As for data analysis, some themes are already in place, which we can elaborate on and some other emergent themes that might come through. "Think globally, act locally." This motto echoes loudly through media and literature for decent reasons. The link is certainly there; all presented cases reflect a belief in the local and its centrality to their sphere of life. The locale--the place--all its natural, cultural and ecological characteristics binds people together. All presented cases evolve around this central theme: place.



Motives for doing:

As for the global part, it might be there only as an air-balloon. People who initiate or live in any of the presented cases might have this “global” thing on mind. However, motives that are more concrete might have spurred them to live in or advocate for one of these “sustainable communities.” Although people might be mostly concerned with their own “life worlds,” others are outward oriented, with some focus on the wider community—not global-- and its problems.

Data and previous studies (Azab, 1997 and Hayden, 1976) show that people have been motivated to this specific lifestyle by a number of factors. These cover personal, socio-cultural, psychological, political, religious, and environmental realms. These cover one or more of the following: a deep need for community, balancing individual differences in preferences for privacy and community, socialization for children and the elderly, experiencing a more “sustainable” lifestyle, and empowerment. It is worth mentioning that the environmental motive came along in the last three decades as a response for

environmental degradation and calls for emancipation. However, one should be cautious as what environmental might imply for different players.

Core belief-systems:

One cannot jump to any generalizations. The only generalization—as Lincoln and Guba say—is that there is no generalization. Beliefs vary from one case to another and even within the same case; we could find some interesting variations. However, the first look into data reveals the following central beliefs:

- Respect for Mother Nature, biodiversity and all kinds of life;
- Respect for diversity within the same community;
- Respect for the commons, as well as private property;
- Culture of sharing;
- Equity and social justice;
- A just and humble lifestyle.
- Participation and empowerment;
- Ecocentric perspective as opposed to anthropocentric values.

This list is certainly impressive or even utopian. Nevertheless, utopian thought has not espoused all these axioms. Environmentally related axioms are not central to classical utopian thought. Only Ernest Callenbach’s *Ecotopia* (1975) is the most explicitly environmentally oriented utopian novel (Blassingame, 1998).

Moving to the presented footprints, one would say that the new urbanism movement does not espouse these as a core belief system. One might read somewhat similar principles, only to keep up the image of the movement and market its products. New urbanism is apolitical, not a radical movement as the others.

Concerning CoHousing, the movement did not start with these principles in mind. Only the immediate community and participation issues were central for advocates and followers. However, environmental issues started to be a concern for some newly formed groups.



As for Eco-cities and Eco-villages, these principals appear to be central. However, different cases have different emphasis depending on the context of development. Whether these cases really exist in Developed or Less Developed Countries, poor, disenfranchised regions, the focus indeed changes. Finally, for Bioregional communities, the sense of place and sensitivity to natural context is robust as opposed to other camps.

Form:

One should be aware that form comprises both physical and organizational forms. Depending on the scale of development we are dealing with, physical form could be approached. However, all our cases reflect some general characteristics such as:

- Environmentally sound site selection and development;
- Compact physical form;
- Place-based communities;
- Mixed-use developments;
- Pedestrian-oriented designs;
- Utilization of environmentally sound architecture whenever possible;
- Special attention towards common and public spaces;
- And a strong sense of place.

Regarding organizational form, the presented cases summon to a participatory and democratic decision-making processes. All members of a community are expected to join in running and managing their communities. Community functions are expected to be joined by everybody

with no exception. All disputes are resolved within the community council and subject to its rules. These, with some minor variations depending on context are exclusive measures of utopian and communitarian thought. The secret word is empowering people through a bottom-up approach to governance.

Meanings of sustainability:

When it comes to sustainability, it is obvious that each case has its own definition for sustainability. If we take definitions from secondary data as the case at hand, we will get the same definition for sustainability as it appears in media and literature. We will get those *BIG* words with ground-to-earth goals. However, available studies and literature show that different cases have different stands toward sustainability. For some, it means empowering the poor and the disenfranchised, while for others it means eating organic food and preserving some old growth trees. The proposed typology sheds some light on the issue within the context of a sustainable community.

A proposed typology

The case studies unfold a simple reality: it is never two secluded camps, either a sustainable community or not. Rather it is about differences, different visions, and ways of doing things. Some cases reflect an image of a sustainable community more than others do. However, this is what characterizes post-modernity with all its colorations and variations. Should we take any of these cases literally, as blueprints for development, means a leap toward de-contextualized solutions –more modernity! There is no single way for creating a “sustainable community.” All depend on context, and the way one defines the terms: sustainable and community.



This suggests a typology, where sustainable communities could be categorized into conventional and radical communities. Table (1) highlights some dimensions for the proposed typology. However, one should recognize that this typology is not mutually exclusive. In essence, going back and forth between different dimensions of the typology, and the presented cases, one finds that a case might slip from one mode to another or eventually display some contradicting characteristics along the proposed dimensions. Along this typology, one can situate different current and future forms and scales of sustainable community initiatives within the locus of human thought. This would help the planning community visualize the linkages and promises and adopt policies relevant for each context.

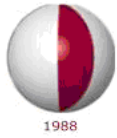
Emergent themes

The second benefit for applying typologies is to understand and re-structure any further findings. Through this presentation, some emergent themes are worth mentioning, these include:

- Contextual situation (scale, level, type of intervention ...etc.),
- Reality, multiple realities and our common future (Construct validity issues and operationalisation i.e., how do different people define and measure sustainability),
- Planning modes (process, functions and principles),
- Issues of change and uncertainty,
- The complexity of urban form issues,
- The self and intergenerational relationships, interpenetration and societal change,
- A prevailing paradigm and an emerging shift,
- Finally, missing in action: Wholes, parts, integrity, and belief systems.

DO WE REALLY CARE FOR PRESCRIPTIONS OR BLUEPRINTS? **RE-CONSTRUCTING REALITY**

“One wakes up; he or she showers, takes breakfast, carools to his job which is located in a huge corporate smart building or just stays at home and teleconference with his colleagues. In the afternoon, he or she surfs the net, do some on-line shopping, or take a nice long walk along the beautifully shaded and safe sidewalks. Finally, he or she shares an organic food dinner with the next-door neighbor and then gets ready for another day.”



Dimensions	Radical sustainable communities	Conventional sustainable communities
Motto	Let's live and help others live a better and just life	Let's live a better life
Physical form	Innovative, flexible depends on context.	Follows professional blueprints
Relation to place	Strong sense of place	Any place would do it.
Relation to nature	Ecocentric perspective.	Anthropocentric.
Organizational	Flexible, open structure & entrepreneurial	Rigid, task-oriented
Getting things done	More voluntary and spontaneous	Assigned and voluntary
Decision-making	By consensus, leaders and mentors might interfere.	By consensus.
Focus of community	Wide focus, receptive for the wider community	Narrow, self-centered.
Type of community	Place-based, with focus on the outside context	Place-based community defined boundaries
Change	Non-linear, change for us and for the Wider community	"Our change," linear.
Economic perspective	Community-based, household-economy.	Based within the existing economy
Sustainability	Hard, empowering (radical) within a new rising paradigm	Soft approach, within the current paradigm
Means and ends	Integrity, believe in "wholes."	Loss of integrity

Table (1): A proposed typology: Radical and Conventional sustainable communities.

This might be an acceptable –or say sustainable- lifestyle for some of us. However, for others it is simply not. Now, let us place this simple question: Has any of these movements and/ or sustainable footprints realized their vision for a “*real*” sustainable community? Let us follow-up with a more credible question that we have tackled before; have we ever agreed on a definition to what might constitute a “sustainable community.” Finally, is it worthwhile fighting for such a definition?

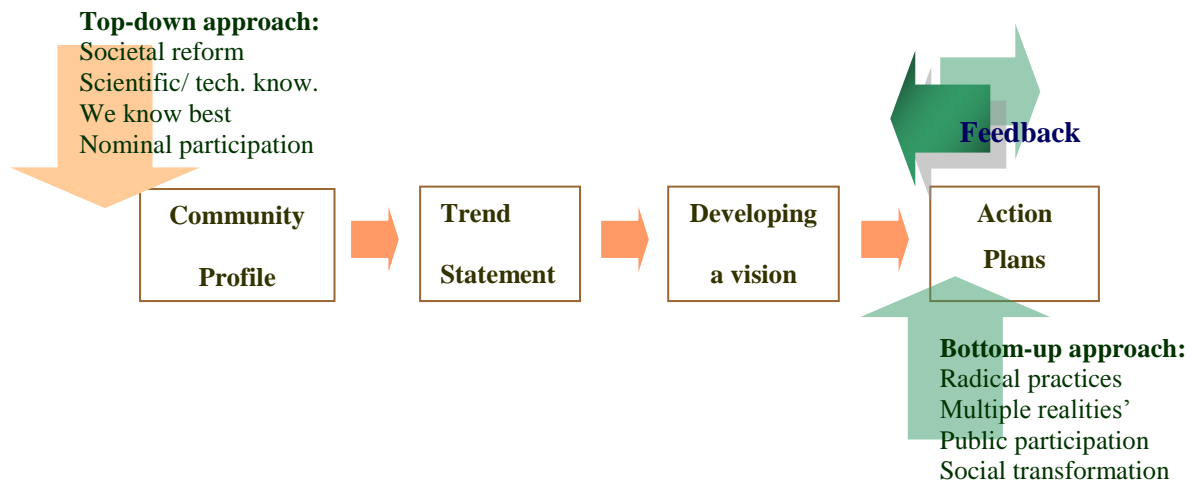


To approach these questions one needs to deal with the findings and the emergent themes critically and constructively. A model or a framework for understanding would be robust to single interpretations at both epistemological and conceptual levels. This model should be more abstract rather than specific or contextual. Only at this level, one would be able to generalize across cases (Alexander, 1995).

A jigsaw puzzle:

A closer look at the list of emergent themes shows the need for a binding theme, and planning theory is susceptible for this end. Among different planning definitions, Friedmann's (1987) stands bold, where he defines planning as the link between scientific and technical knowledge on one hand and actions in the public domain on the other. All the presented cases reflect this very simple definition. They reflect the embodiment of both ends: knowledge and action. However, in our situation knowledge is not restricted to scientific and

Fig (2): A four-step planning process



Source: Seltzer, 1995 (modified by the researcher).

technical knowledge but moves toward philosophical and ecological terrain. This takes place within a specific context at a certain scale and level of action. Friedmann (1987) enriches this definition by proposing a typology for planning modes. These are planning as social reform, policy analysis, social learning, and planning as social mobilization. These traditions vary in perspective and goals, principles and assumptions, tools, processes and certainly outcomes. A simple planning process could bring things to focus.



Fig (2) illustrates a conventional four-step planning model. This normative planning process could lend itself to any of the aforementioned planning modes. The process could be apolitical (top-down approach), or politically radical (Friedmann, 1987 and Niebanck, 1993). Considering the emergent themes, leads to more of a wholistic approach to planning. Fig (3) depicts this proposal. This framework intentionally lends itself to some axioms of “post-positivism.” This is odd with the prevailing “positivist,” modern paradigm that still governs most professions and research activities. It calls for subjectivity, contested, multiple realities, mutual interaction, and a different nature of change. What are the implications of this model for the realization of “sustainable communities,” if these were ever to exist and thrive?

WHOLES AND PARTS: SOLVING A PUZZLE

“A sustainable community *is* one that uses its resources to meet current needs while *ensuring* that *adequate* resources are available for future generations. It seeks improved public health and a *better quality of life* for all its residents by limiting waste, preventing pollution, maximizing conservation and *promoting efficiency*, and developing local resources to revitalize the *local economy*. Defined goals are rooted in the natural environment and human nature and that call for the use of technology in an *appropriate* way to serve both of these resources.

(A sustainable community advocate, Quoted in: Geis, 1996) Researcher’s emphasis

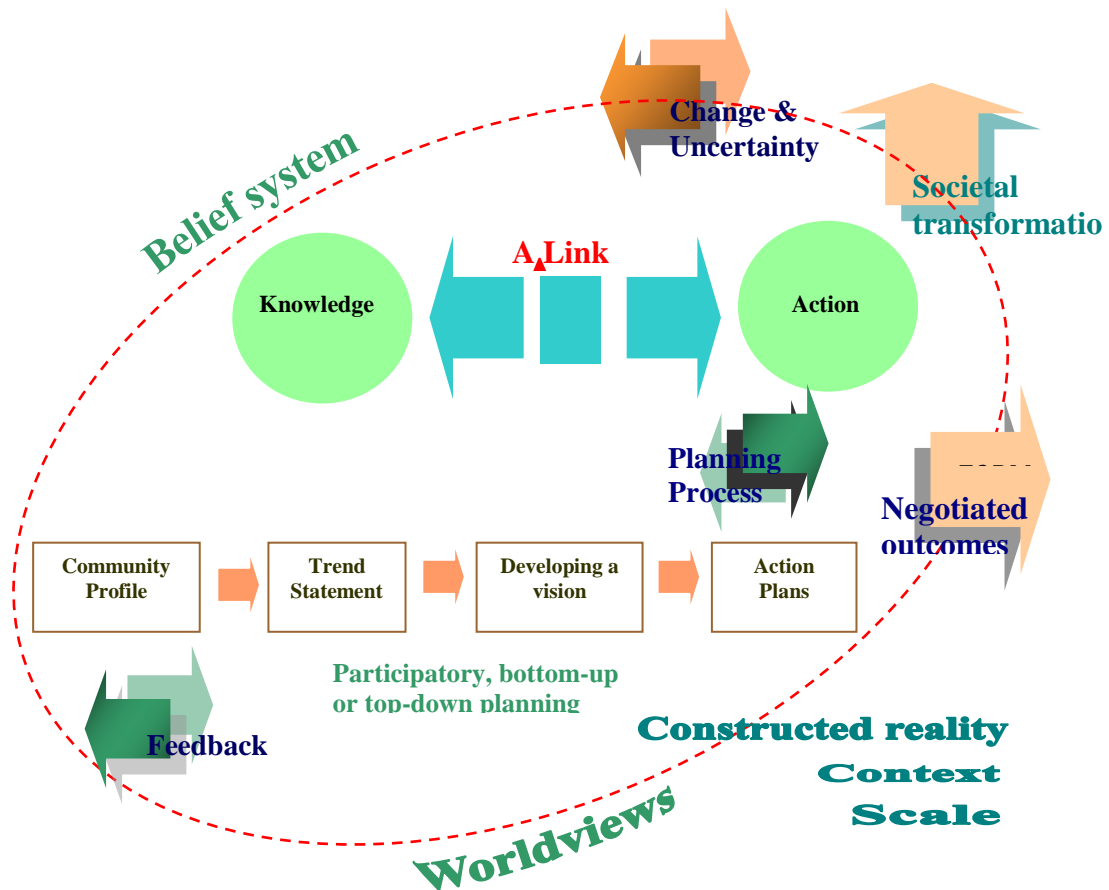
“My best *hope* was, that, between *theory* and *practice*, a true and a *viable* mode of life *might* be struck out; and that, even should we ultimately *fail*, the months or years spent in the *trial* would not have been wasted, either as regarded *passing enjoyment*, or the *experience which makes men wise*.”

(Communitarian Nathaniel Hawthorne, quoted in Hayden, 1976). Researcher’s emphasis

Go through these quotes ... read them once more and contemplate. Feel the words and their meanings. Should we say that the first quote has been expected throughout this journey? Is it all about lists and indicators for sustainability and blueprints for sustainable forms? I guess and hope not.

The first quote comes in more of professional, scientifically backed-up tone. It reflects an objectively, well defined vision for a sustainable community; *we professionals know best*. On the other hand, Hawthorne talks modestly about hope, process, success and failure, joy and wisdom and strives for a societal change or transformation if possible. His action could be justified only on try and error bases. What really concern him are the process and the experience that makes men and of course, women wise.

Fig (3): A general framework for planning.



These quotes reflect two opposing stands. The first is a positivist; deterministic approach that puts reality and vision up front and moves ahead, while the second mostly adheres to post-positivism, where outcomes are negotiated and subject to contextual situation; change is unavoidable and difficult to be accounted for, and subjectivity and differences are appreciated and mostly welcome.

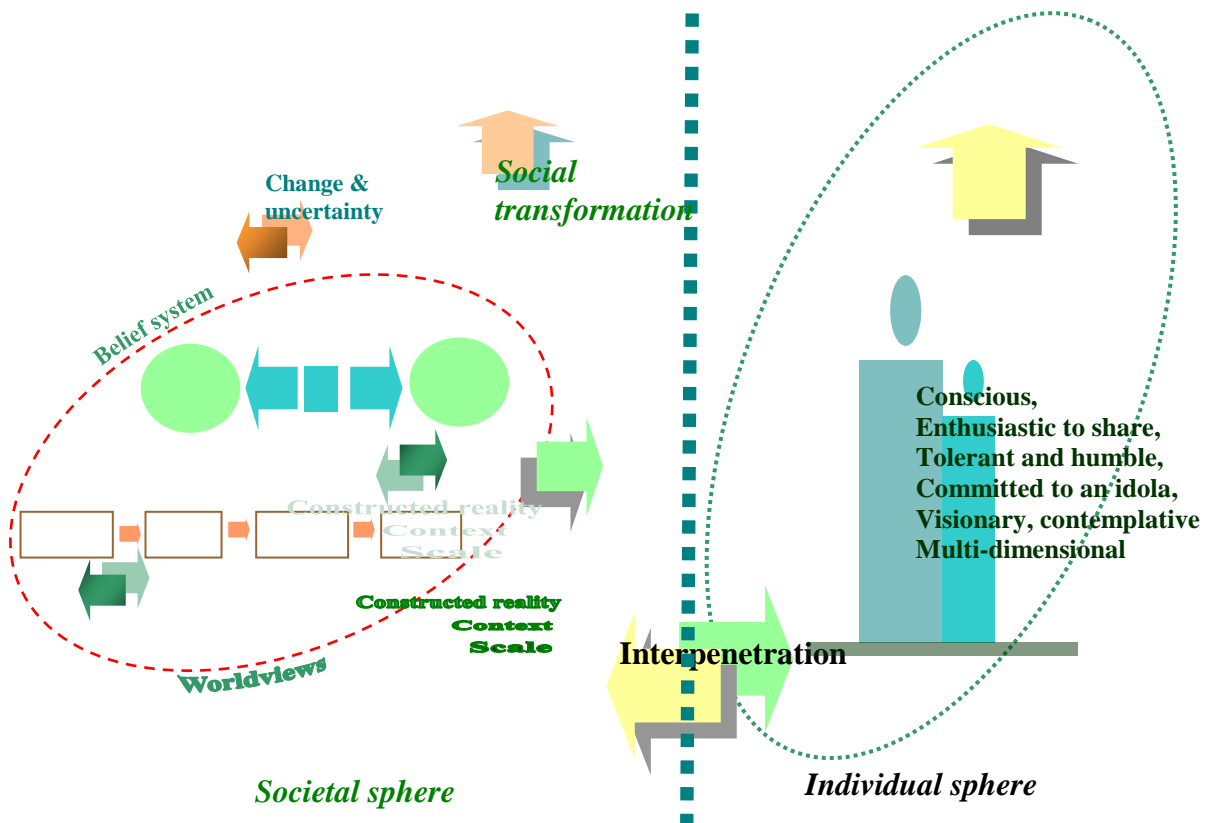
Confusing ... though inspiring. How could such contradicting quotes support human moves toward a sustainable future? If some of us *already have the answers*, why do we fear the future? What is the urgency for *exploration* or for *try and error*? On the other side, if those and other lists are biased or incomplete, how could we hit the sustainability “jackpot” and be *certain* about the future? Lots of mystery ... no answers!



This venture started on the premise of exploring sustainable communities: their dimensions and prospects for the future. From a positivist stand, one would be highly motivated to develop some lengthy sustainability indicators and checklists, blueprints for forms and so forth. Hence, the first quote could be fulfilling, especially if some plans, layouts, and economic analysis are attached to it. This could be totally justified by the urgency of the matter at hand and fears of local and global catastrophes. Our efforts then, would be based on objectively, justified scientific knowledge. We have *the experts* who indeed *know the facts* and will *guide* us through this phase. Change is unavoidable, but *predicted*!

Unfortunately, these axioms are under fire, and a new paradigm is on the rise. One should not be so sure of a single definition for either sustainability or community. Even our reality is susceptible to different interpretations. Finally, we come to the issue of change, which is by no means linear, where specific actions should lead to some predicted outcomes (in contrast to the assembly metaphor of modernity). On contrary, post-positivism utilizes the metaphor of morphogenesis, where our system is conceptualized as a composition of diverse elements that interact by mutually causal and indeterminate processes.

Fig (4): Planning, societal change, and interpenetration.



This system is open to external inputs, and then it can change morphogenetically. A new form, unpredicted by any of its parts, can arise in such an open system (Hwang, 1996 and Lincoln and Guba, 1985).



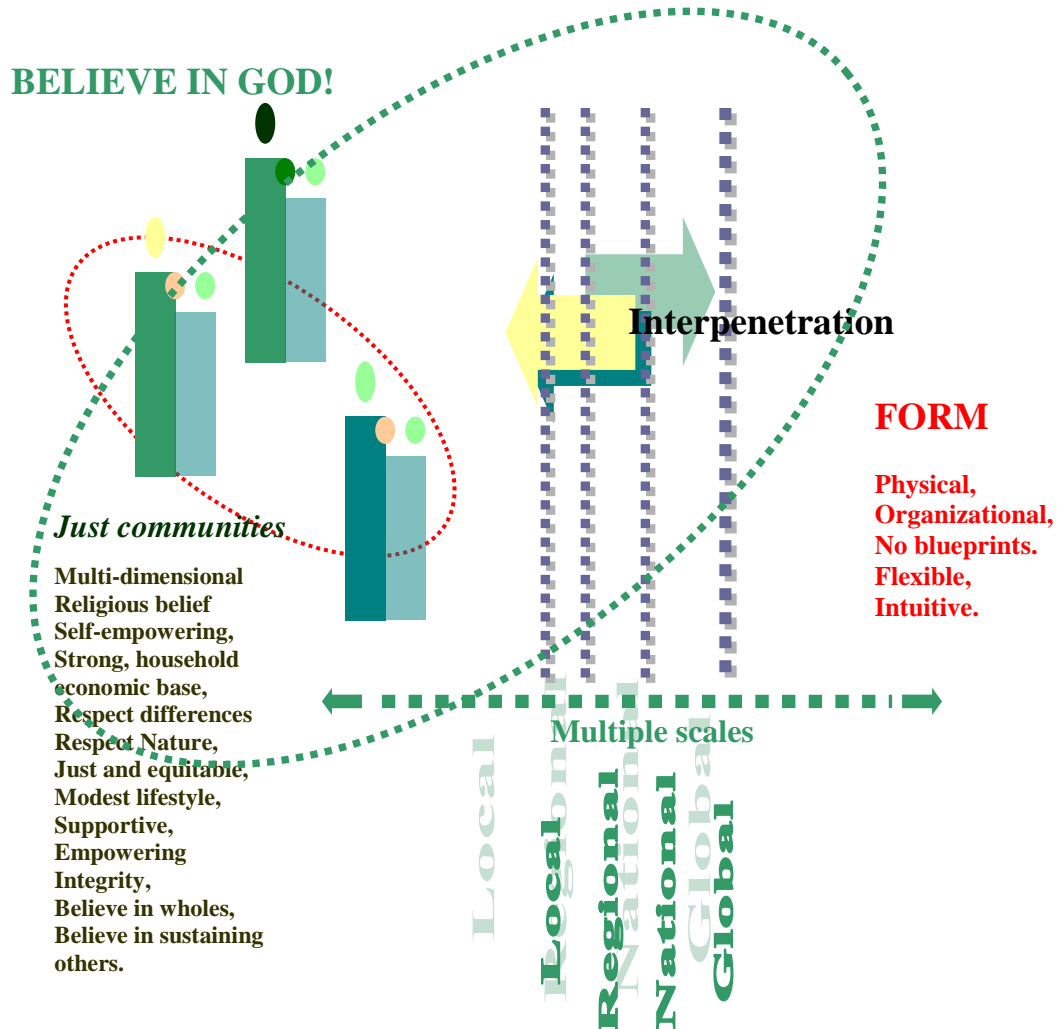
System's change, at both individual and societal levels brings the issue of interpenetration and the holographic nature of our reality. As for interpenetration, it refers to the interrelationship between change at the individual level and how it could lead to societal change. Fig (4) shows two interrelated spheres: the first is the personal, individual, while the second is societal. Change at one scale feeds the other and vice versa. Also, the diagram illustrates characteristics that should be embodied in individuals ready for inflicting that change. This comprises consciousness, enthusiasm for sharing and participating, being visionary, contemplative, and committed to an idola (Azab, 1997).

The other complementing axiom of this rising paradigm is the holographic metaphor. In contrast to the predominant mechanistic paradigm, that conceptualizes the world as a wondrous machine, post-positivism looks at the world as a holographic image. This image is created by a dynamic process of interaction and differentiation. Information is distributed throughout -that at each point- information about the whole is contained in the part. In the sense, everything is interconnected like a vast network of interference patterns, having been generated by the same dynamic process and containing the whole in the part (Lincoln and Guba, 1985). The link between interpenetration and holographic nature of the world is obvious and unavoidable for sustainability and one's self-growth. The move toward sustainable communities at any level or scale is meant only to trigger change at larger scales: societal and global scales.

However, there seems to be a gap that keeps things from initiating the anticipated change. Niebanck (1993) suggests an answer. In his account of environmental planning practices, he offered four different modes, one of which he called "principled action" mode of planning. "This mode," Niebanck says, "puts values up-front. Here, the issue is not "what shall we do?" as "what must we do?" This mode is reflective, ethical and the key word that describes it is "*integrity*." Integrity is absent in our actions, professionalism, developmental double standards, interpreting reality and our attitude towards the common (Hardin, 1968).



Fig (5): Prospects for the uncertain future.



According to Merriam Webster's Collegiate Dictionary, integrity means the state of being unimpaired or the quality or condition of being "whole" or undivided. This missing "whole" is what really hinders change at both individual and societal levels. What intrigue us are a breathless race and a belief in the part, sustainable community, at the expense of the whole, the wider community, and a belief in a model, instead of working for a whole society. Mumford's reconstructive utopias, deep ecologists, Daly and Cobb's religious vision, all advocates for a whole rather than fragmented parts that are mere abstractions leading to idolatry (treating as ultimate or whole that which is not ultimate or whole (Daly and Cobb, 1994). Here, the whole is our existence, where means and ends meet, while the part, is a sustainable community, which should be looked at as a means to an end. Within that context, calls come from different schools of thought to think globally and act locally or think locally and act globally. Whichever you choose, the stress and focus is on small-scale communities, where work, leisure and living couple together in the same place. These should raise the banner of the household economy and a strong sense of place. Only then, networking among different communities would enrich the whole and the parts.



DEPARTURE AND HOPE

The problem of the Twenty First Century is how to live good and just lives within limits, in harmony with the earth and each other. Great cities can rise out of cruelty, deviousness, and a refusal to be bounded. Livable cities can only be sustained out of humility, compassion, and acceptance of the concept of “enough.”

(Meadows, 1994).

“... to live content within small means; to seek elegance rather than luxury and refinement rather than fashion; to be worthy, not respectable, and wealthy not rich; to listen to stars and birds, to babies and sages with open heart; in a word, to let the spiritual unbidden and unconsciousness grow up through the common.”

(Van der Ryn, 1987).

For readers from a Less Developed Country, these quotes might actually look funny and inconsistent with Western lifestyles and other global realities. Advocates call for sustainability; *their* sustainability as the road to a better future. *Better for whom?* Are we –as human beings- really on the same “boat?” Is the UN and its official bodies a credible body for acting on behalf of the rich and the poor, those who have and those who have not? Do environmental gains filter down to disenfranchised populations or are these just monopolized by the elites and new forms of colonial powers? ... Oops, global powers I mean.

One should be confident enough that any proposed model for a sustainable community that equates the newly marketed American model for democracy would end up in disaster. What we really need is dialogue, more wholistic, just, and incremental approaches that respect human differences. There is no single pre-defined set of dimensions for a “sustainable community.” The presented cases and many more might display -at one point or another- one side of the contested terms: sustainability and community. A cooperative in a Less Developed Country, a family farm, or even a community initiative for supporting drug-addicts or the elderly, all are steps on the road to a sustainable community.

It all starts from within, from our souls and belief systems. Some day, it might filter-up to the whole society and the globe. Even the term could be shuffled and read as “communities for sustainability.” Think about the possibilities. Here, one would start with a community, a multi-dimensional community that reflects different images and triggers personal change and one’s self-growth. If it were to succeed, interaction with other communities would lead finally to a better life; sustained or not, this is susceptible to uncertainty and our belief system.



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ECOLOGICAL ROMANTICISM IN BRITISH LITERATURE

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Due to the Industrial and Agricultural Revolution in the early nineteenth century, the English had to adapt to a different lifestyle which was far from nature. As a reaction to this revolution, the romantic poets discussed in this paper established their longing for being close to nature in different ways. Whereas Coleridge and Wordsworth developed a moral outlook, Shelley treated nature as a creative force to foster his poetic faculty as to help mankind. Focusing on ecologically sensitive Wordsworth mostly, this paper discusses the role of nature and its significance in Romantic Poetry. Although ecology came to the fore in the late twentieth century, Wordsworth had foreseen the importance of this phenomenon one century ago and wrote poems about human violence against nature and animals. However, was this only a sentimental blind reaction or an intentional criticism of his contemporary time?

When the first edition of *Lyrical Ballads* was first published in 1789, a new age in English poetry began. In this new age, which is called the romantic era of poetry, nature came to the fore since the Romantics rebelled against the emphasis on the material and turned to nature. Perhaps they were rebelling against the Industrial Revolution or they wanted to warn the next generations about the destructive forces of the technologies or as they witnessed that people started to live in cities they wanted to warn them about the importance of being close to nature or they wanted to encourage us to engage in more positive interaction with the environment. Wordsworth, Coleridge and Shelley wrote about nature from different perspectives. Each of these prominent poets interpreted nature differently. In this paper, drawing occasional parallels to the other Romantic poets the environment and nature dimensions of Wordsworth's poetry will be highlighted.

Wordsworth, since when he was a child was a nature lover and this love predominates his most poems. He believed that the best way of life was a rural life and especially when a railway was built in his beloved Lake District he protested the mechanization and urbanization of rural life in his poetry. The gap between humanbeings and the natural world was growing day by day and Wordsworth's sensitivity towards preserving healthy ecosystems was increasing. In 'The World is too Much with Us', he accuses the modern age since it draws people away from nature:

Getting and spending , we lay waste our powers.
Little we see in Nature that is ours;
We have given our hearts away, a sordid boon;
The sea that bares her bosom to the moon;
The winds that will be howling at all hours,
And are up-gathered now like sleeping flowers;
For this, for everything, we are out of tune;
It moves us not...(2-9).



The angry tone of the poem reveals Wordsworth's opinion about the concerns of humanbeings in the modern world. Wordsworth criticizes 'the world' that is preoccupied with 'getting and spending' only. This preoccupation with the material drives us away from nature so much so that 'Little we see in Nature that is ours'. Man is wasting his time on earth by not appreciating nature but by making materialistic gains more important in his life. However, this materialistic progress being made by mankind is not without consequence and Wordsworth had foreseen the destruction of the environment and rural life by the global economic expansions of the 20th century and utilized eco-environmental themes in his poems. Similarly, in 'Michael' the destroying powers of 'industrious life' on rural life are prevalent:

...Long before the time
Of which I speak, the Shepherd had been bound
In surety for his brother's son, a man
Of an industrious life, and ample means;
But unforeseen misfortunes suddenly
Had prest upon him; and Old Michael now
Was summoned to discharge the forfeiture,
A grievous penalty, but little less
Than half his substance (209-217).

Not to sell his lands which would be his son Luke's legacy he sends his son to London to earn money there with the help of a prosperous kinsman. Luke stands for the landless peasants drifted into London by the contemporary political and economic conditions. However, as Shelley remarked 'Hell is a city much like London' and quite a different place from their villages, and urban life would destroy most of them like it destroyed Luke. 'He in the dissolute city gave himself / To evil courses...' (444-445). Michael, a real shepherd of the Lakeland, is dead, which symbolizes the fact that the shepherds have no place in this industrial age. Besides, Michael's cottage, the Evening Star, is destroyed and the sheep-fold is left unfinished. The pessimistic tone at the end of the poem gives no hope for the future except for the oak beside their door. Similarly, the destruction of country life is foreshadowed in 'The Excursion' as well, since at the end of the poem like Michael's Margaret's cottage is in ruins: 'Meanwhile her poor Hut/ Sank to decay;' (900-901).

Since when he was a child, nature had been Wordsworth's teacher. He believes nature teaches us how to be a complete humanbeing. In 'Lines Composed A Few Miles Above Tintern Abbey', Wordsworth speaks of nature as 'The anchor of my purest thoughts, the nurse,/ The guide, the guardian of my heart, and soul / Of all my moral being' (109-111). He believes through communion with nature in his early childhood he acquired moral values. In this respect, nature is better than books. Actually, Wordsworth had never been a good student. Wordsworth studied in St. John's College from 1787 to 1791, and he describes his feelings as '...a strangeness in the mind,/ A feeling that was not for that hour,/ Nor for that place' (80-82) in the third part of the *The Prelude*. In 'The Tables Turned', he says 'Up, up my Friend, and quit your books' because he believes listening to a bird singing makes us wiser than reading books, and so he says 'Let nature be your teacher' (16):



One impulse from a vernal wood
May teach you more of a man,
Of moral evil and of good,
Than all the sages can.

....

Enough of Science and of Art;
Close up those barren leaves;
Come forth, and bring with you a heart
That watches and receives(21-24,29-32).

As in 'The Tables Turned', in 'Expostulation and Reply' when a friend asks him why he is sitting on a stone without doing anything and why he does not read anything he replies that in this 'wise passiveness' nature educates him and influences him positively because 'The eye-it cannot choose but see;/ We cannot bid the ear be still;/ Our bodies feel, where'er they be'(17-19). In the third part of *The Prelude*, he describes how he has started to interact with nature and how nature being a teacher has shaped his personality. To illustrate, in *The Prelude*, Wordsworth tells that one summer evening when he found 'A little boat tied to a willow tree' he unloosened it and 'stepping in / Pushed from the shore. However, when 'his boat went heaving through the water like a swan' the sky darkens, then 'a huge peak....upreared its head'as if to punish him for his wrongdoing(357-385). In the same way, he tells us how he liked hunting birds in Book First and how he disturbed nature in her sleep and how'....the bird/ Which was the captive of another's toil/Became my prey'(319-321). As to teach him that this was wrong the hills started following him breathing slowly:

....and when the deed was done
I heard among the solitary hills
Low breathings coming after me,....(321-323).

Wordsworth ascribes healing powers to nature, which is one of the benchmarks of the romantic movement. Mina Urgan in her 'İngiliz Edebiyatı Tarihi' (p.585) gives John Stuart Mill as an example for nature's healing powers in Wordsworth's poetry. She asserts that Mill when he was twenty-two had a depression and lost his love for life. He was hopeless and so thought that he could never find peace in his life. By chance he started reading Wordsworth's poems and as he tells in his *Autobiography*, from those poems about nature he learnt both how to be happy and how to be a better person. In 'Lines Composed A few Miles Above Tintern Abbey', Wordsworth describes how nature provided him with 'sensations sweet,/ Felt in the blood, and felt along the heart':

But oft, in lonely rooms, and 'mid the din
Of towns and cities, I have owed to them
In hours of weariness, sensations sweet,
Felt in the blood, and felt along the heart;
And passing even into my purer mind,
With tranquil restoration....(26-31).



He adds how nature has worked upon him in his absence from it and how the memory of the woods and cottages restored his mind. When he felt the heavy burden of the world in crowded cities, the memory of the woods with which he was one when he was a child helped him keep his mental well-being:

....that blessed mood,
In which the burthen of the mystery,
In which the heavy and the weary weight
Of all this unintelligible world,
Is lightened....(37-41).

He complains about 'evil tongues', 'rash judgements', 'the sneers of selfish man', 'greetings where no kindness is', and 'the dreary intercourse of daily life. He believes nature's healing power over the mind helps us overcome emotional suffering by bringing happiness and joy into our lives.

Wordsworth was a poet who paid attention to nonhuman creatures and his sympathy for animal life is apparent in his poems. His 'Hart-Leap Well' brings animals into the foreground. Wordsworth tells the story of Sir Walter chasing a hart in a mountainous landscape. Wordsworth utilizes the mistreatment of animals as the theme of this poem. Sir Walter not only murders the hart brutally but also wants to have a pleasure house built at the spot where the poor animal died:

I'll build a pleasure-house upon this spot,
And a small harbour, made for rural joy;
'Twill be the traveller's shed, the pilgrim's cot,
A place of love for damsels that are coy (57-60).

His looking at that 'darling spot' where the poor hart died with 'silent joy' suggests sadistic pleasure. When describing the poor animal's death Wordsworth uses such words as 'toils' and 'groans', which suggests the poor hart's misery. The cold-blooded murder would be punished and that spot would be cursed. That spot is so barren now that you'd think 'Here in old time the hand of man hath been'. 'It seemed as if the spring-time came not here./ And Nature here were willing to decay'(112,115-116). 'The hand of man' destroys everything on Earth. As a result, decaying nature will be his tragedy. Similarly, Samuel Taylor Coleridge in his 'The Rime of the Ancient Mariner' resorts to the theme of human violence against nature. Coleridge's mariner commits a crime by killing the albatross 'That made the breeze to blow'(94) and suffers a lot for his wrongdoing. It was only when the mariner blesses God's creatures in the moonlight that the curse is broken and he is allowed to go back home. He teaches us to love and be reverent to all things that God made:

He prayeth best who loveth best,
All things both great and small;
For the dear God, who loveth us,
He made and loveth all (614-617).



Such ecological consciousness is present in Coleridge's 'To a Young Ass' as well. In the poem, the speaker addresses the foal as 'Meek Child of Misery' and 'Poor Little Foal of an Oppressed Race!'. Contrary to the common belief that animals are of secondary importance compared to man and that they do not suffer, Coleridge believes in the fact that animals can suffer as well. In the above mentioned poem, he implies that he sympathizes with this 'oppressed race' since they are mistreated by man. In this respect, he agrees with Wordsworth that the hand of man destroys everything on Earth.

Some romantic poets admired nature because it is pure, simple and beautiful and like all beautiful things it is a source of inspiration to them. Chief amongst these poets is Wordsworth. In *The Prelude*, he puts forward that nature enhances human creativity:

For I, methought, while the sweet breath of heaven
Was blowing on my body, felt within
A corresponding breeze, that gently moved
With quickening virtue, but is now become
A tempest, a redundant energy,
Vexing its own creation(33-38).

The 'breeze' suggests the divine life in nature, and this divine life in nature inspires the poet. Similarly, Shelley in his 'Ode to the West Wind' writes about the stimulating creative force nature has in poets. However, his treatment is different. He links nature with art and asks the wind to 'make me thy lyre' and 'Drive my dead thoughts over the universe/ Like withered leaves to quicken a new birth!'(57,64-65). By invoking creative powers in him and by playing with him like a 'lyre' the wind would contribute to his poetic faculty and 'scatter, as from an unextinguished hearth/ Ashes and sparks, my words among mankind!'(66-67). So, with the help of nature Shelley's poetry would help mankind to improve themselves.

Can poetry help us acquire environmental consciousness? Despite W. H. Auden who stated 'poetry makes nothing happen' in 'In Memory of W.B. Yeats' ecocritics believe otherwise. Robert Morrison points out that being an ecocritic James McKusick acknowledges 'The English Romantics and the American Transcendentalists were engaged in lifelong scrutiny of the same fundamental questions as today's most advanced ecologists....'and adds that 'Wordsworth was truly ahead of his time and radically innovative in his concern for the preservation of traditional rural ways of life'(Morrison,2002). These Romantic poets established grounds for environmental consciousness by teaching us that we are not masters but members of the ecosystem and that we must stop bending nature to our will and adapt our lifestyles to the natural surroundings. 'What are poets for ?' is the title of the last chapter of *The Song of the Earth* by Jonathan Bate. Robert Morrison summarizes Bate's words as: 'poets are there to quicken our appreciation of what environment is and might be, and that acts of the imagination lift the veil of familiarity to reveal 'a planet of which we are a part but which we do not possess'.



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TONGUES IN TREES: SHAKESPEARE AND THE ENVIRONMENT

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Our relationship with the natural world, which constitutes our environmental state of being, has always been a major concern of inquiry. Literature, like other forms of art, makes this inquiry through a mimetic and exegetical praxis which is exemplified through various forms of nature writing and scholarly studies of such writing. Thus, it attempts to arouse our interest in the natural world and, hence, enhance our environmental sensitivity. Science, on the other hand, carries out the inquiry through the pragmatics of scientific methodology involving experimentation, observation, measurement, classification and other procedures in order ultimately to make instructive statements whereby our environmental awareness is strengthened and made proactive. So, the natural world becomes a common ground where both literature and science converge in order to instruct and enlighten us so that we may live in a sustainable harmony with nature.

Historically, although the ecocritical theory and its pragmatics has been a recent concern of literary scholarship,¹ the mimetic praxis as regards the natural world has always been a recurrent concern ever since the beginnings of literary production; indeed, from *The Epic of Gilgamesh* to Homer and the Bible among the earliest texts, one can discern some vestiges of environmental sensitivity, which is revealed, to some extent, through fragmentary depictions and descriptions of the natural world. For instance, the story of the wild man Enkidu in *The Epic of Gilgamesh*, who lives in a sustainable harmony with nature and its fauna,² can be understood in environmental terms. Similarly, Homer's references to the natural world such as forest fires,³ the wild fowl with loud cries, flying here and there on the meadow by the river Cayster⁴ [the "Küçük Menderes" in Western Turkey], mountains covered by thick fog,⁵ the roaring of the sea, and huge waves breaking on the land,⁶ the forest on the island of Calypso,⁷ Odysseus' boar hunting on Mount Parnassus,⁸ and many other nature references -- all these references can be regarded as ecologically meaningful. As for the Bible, which certainly embodies various ecologically suggestive expressions and passages, one may, for example, recall Betsy S. Hilbert's seminal article, which presents an ecological reading of Deuteronomy [29-40].

¹ Although the term "ecocriticism" was first introduced by William Rueckert [Mazel 1; Branch and Slovic xiv] back in 1978 when he published his article "Literature and Ecology: An Experiment in Ecocriticism" in *Iowa Review* 1978, 9, 71-86, which was reprinted in Fromm and Glotfelty [105-23], essentially the formulation of the ecocritical theory as a framework of reference for "the study of literature and environment" [Branch et al. xi] began in the early 1990s in the United States [Branch and Slovic, especially xiv-xix].

² *The Epic of Gilgamesh* 63-65.

³ *The Iliad*, I, 85 [II. 455-56] (All the references are to the volume and page numbers; the references in square brackets indicate the book and verse numbers of the original Greek text).

⁴ *The Iliad*, I, 85 [II. 459-63].

⁵ *The Iliad*, I, 117 [III, 10-12].

⁶ *The Iliad*, I, 185 [IV, 422-26].

⁷ *The Odyssey*, I, 187 [V, 237-40].

⁸ *The Odyssey*, II, 259-61 [XIX. 428-54].



Indeed, through its varied representations of the natural world, literature has enabled us to reshape and broaden our sense of a sustainable environment. Moreover, by problematizing, depicting and discussing environmental issues, it has urged us to revisit our cultural values and assumptions about nature and its conservation. Therefore, literary studies with relation to environmental representation in texts can be instructive and upgrade our awareness of the natural world. In this respect, as Michael Branch and his colleagues [xiii] have asserted in their *Reading the Earth*, especially, ecocriticism suggests means by which we might read literary texts with a new appreciation for what they reveal about the complex of relationships that mediate interactions between humans and their environments. Environmentally informed literary scholarship offers a profound opportunity to read literature with a fresh sensitivity to the emergent voice of nature.

It is, therefore, the aim of this paper to privilege Shakespeare ecocritically and demonstrate how, if read with an environmental sensitivity, he speaks to us environmentally across the centuries, and thus, in a sense, becomes our contemporary. Thus, he can be presented as an important voice in what has been rightly termed “the environmental humanities” [Howarth 6]. However, among some students of Shakespeare, there seems to be prevalent some degree of scepticism and, one may add, even cynicism about scholarly attempts for an ecocritical reading of his texts. In this regard, it has been argued that “ecocriticism, with Shakespeare at least, has largely failed to distinguish itself from the values of very clearly non-ecocritical work that has already been done with Shakespeare” [Estok 109]. The argument has been further maintained as follows:

To many Shakespeareans, ecocriticism seems not to be new and instead to be like old thematicism and nature studies. Many Shakespeareans want to know what ecocriticism can offer, either methodologically or theoretically, that will shed new light and meaning on their field of study [Estok 109].

In fact, what follows is not intended as a response to a polemical position as such. Perhaps it is in consequence of such a view that, in current ecocritical studies of literature, “Shakespeare has remained excluded” [Estok 109]. If one recalls that “one of ecocriticism’s most important tasks [...] is expanding its boundaries [...] to address a wider spectrum of texts” [Armbruster and Wallace, Intro. 2] and that “ecocriticism offers a critical perspective that can enliven any literary and theoretical field” [Armbruster and Wallace, Intro. 3-4], it would not be out of place to revisit Shakespeare in terms of environmental sensitivity and situate him in an ecocritical context.

Obviously, among Shakespeare’s plays, it is *As You Like It* that is embedded with a remarkable amount of environmental reference and explicitly displays some degree of ecological sensitivity. Although the play has been traditionally regarded as one of Shakespeare’s festive comedies, in which, through the depiction of an idealized and romantic pastoral setting, the social and moral values of the country are metaphorically privileged and celebrated against those of the city,⁹ ecologically it also problematizes man’s relationship with the natural world and, hence, can be read as an environmental parable.

⁹ For moral and other thematic interpretations of the play through the juxtaposition of the city (or the court) and the country as well as through a contrastive discussion of pastoralism and urbanism, see, for example, Laroque [193, 232, and 235]; Umut [especially 135-38].



The Forest of Arden, in which the play is set, in fact becomes an ambivalent epitome of the natural world; it is not only idealized and romanticized in pastoral terms but also depicted as a kind of wilderness manipulated and exploited by human beings. Hence, it becomes a metaphorical amalgamation of the pastoral as a stylized and literary environment and the wild as a biotic formation of the physical environment.¹⁰ In other words, on the one hand, it is inhabited by a community of morally unspoiled, generously hospitable, innocently wise and self-content shepherds leading a simple, frugal, and secluded pastoral life;¹¹ yet, on the other, it is a wild place of the “fat and greasy” deer,¹² deadly snakes,¹³ ferocious lions,¹⁴ thorny shrubs such as hawthorns and brambles,¹⁵ osiers,¹⁶ oaks,¹⁷ palms,¹⁸ and olives.¹⁹ It is indeed presented both as a place with “so quiet and so sweet a style,”²⁰ which evidently evokes the traditional pastoral concept of *locus amoenus*, and also as a “desert” place²¹ or an “uncouth forest,”²² which has been invaded by an exiled group of urbanites ready to adapt themselves to it and exploit it for their needs. This ambivalent nature of the Forest of Arden is explicitly reflected in the Duke Senior’s initial speech, in which the rigours of the physical environment are tolerated through the pleasures of its pastoral solitude and simplicity:

Now, my co-mates and brothers in exile,
Hath not old custom made this life more sweet
Than that of painted pomp? Are not these woods
More free from peril than the envious court?
Here feel we but the penalty of Adam,
The seasons’ difference; as, the icy fang
And churlish chiding of the winter’s wind,
Which, when it bites and blows upon my body,
Even till I shrink with cold, I smile and say
‘This is no flattery: these are counsellors
That feelingly persuade me what I am.’
Sweet are the uses of adversity,
Which like the toad, ugly and venomous,
Wears yet a precious jewel in his head;
And this our life exempt from public haunt,
Finds tongues in trees, books in the running brooks,
Sermons in stones, and good in every thing.
I would not change it.²³

¹⁰ For a passing discussion of the pastoral and the wild with reference to African American culture at large and Frederick Douglass’s *The Narrative of the Life of Frederick Douglass, An American Slave* in particular, see Bennett [especially 195-97].

¹¹ II.iv.76-78 and 85-88; III.ii.11-93 and iii.1-49.

¹² II.i.33-57.

¹³ IV.iii.109-15.

¹⁴ IV.iii.116-20, 127-28, 132-33, and 148-50.

¹⁵ III.ii.385.

¹⁶ IV.iii.81.

¹⁷ II.i.31.

¹⁸ III.ii.187.

¹⁹ III.v.75 and IV.iii.79.

²⁰ II.i.20.

²¹ II.i.23, and II.vii.110.

²² II.vi.6.

²³ II.i.1-18.



Since the Duke Senior has fled from his “younger brother” Frederick’s political conspiracy of usurpation and taken refuge with his courtly retinue in the Forest of Arden,²⁴ actually he and his courtiers have removed themselves from “th’infected world”²⁵ of the court, where all kinds of danger and moral corruption prevail, into nature, through whose ecology they are to be morally self-educated in humility, charity, tolerance, frugality and so forth. Moreover, it is from this same world that the Duke’s daughter Rosalind, her cousin and the new duke’s daughter Celia, the clown Touchstone, Rosalind’s lover Orlando, and his old servant Adam have fled to take refuge in the forest. So, the natural world of the forest, which they have all come to inhabit, becomes the new environment in which their survival depends on their efforts to come to terms with its geographical and climatic circumstances. Hence, they must suspend, if not cast away, at least temporarily, their urban manners and preconceived ideas about the natural world, and establish a harmonious relationship with it. So they must undergo a process of adaptation, which requires a new environmental awareness.²⁶ In other words, their anthropocentric perception of the environment must be replaced by an ecological perception that, to quote Meeker, “plants, animals, mountains, seas, and sky [...] are] components of a complete and integrated system in which human beings find or create their proper places” [Meeker 7]. Although at the outset the Duke Senior and his courtiers tend to display an anthropocentric attitude towards the environment by maintaining their courtly habits such as hunting,²⁷ feasting,²⁸ and revelling,²⁹ they soon adapt themselves to their new environment and learn how to endure, to use the Duke’s phrase, “shrewd days and nights” in it.³⁰ However, among them, it is the Duke’s old councillor Jacques who, besides the old shepherd Corin,³¹ is portrayed as ecologically the most sensitive character in the play. For instance, out of his environmental concern, he is strongly opposed to the Duke’s hunting, which he metaphorically regards as man’s ecological subversion. For him, the killing of the deer is essentially an act of exploitation and, hence, usurpation³² since, ecologically, it is unacceptable “to fright the animals and to kill them up / In their assign’d and native dwelling-place.”³³ If one recalls that, as Keith Thomas has clearly pointed out, “in Tudor and Stuart England the traditional view was that the world had been created for man’s sake and that other species were meant to be subordinate to his wishes and needs” [Thomas 17], Shakespeare’s ecological discourse thus uttered by his character Jacques certainly signifies a sensitivity somewhat unusual for his time. This sensitivity in the play is further manifested when Jacques requests of the young lover Orlando, who has been carving love poems for Rosalind in the barks of the trees in the forest,³⁴ that “I pray you, mar no more trees with writing love-songs in their barks.”³⁵ What has been so seriously voiced by Jacques about the damage to the trees has its humorous parallel in Rosalind’s own words when, as a disguised young swashbuckler,³⁶ she says to Orlando who she knows does the carving:

²⁴ I.i.104-27.

²⁵ II.vii.60.

²⁶ On adaptation and manipulation as the two contrary human attitudes towards the environment, see Meeker [4-5, 20, and 51].

²⁷ II.i.21 and IV.ii.1-5.

²⁸ II.v.31-32 and 62-63, and vii. 1-203.

²⁹ II.v.1-63 and vii.173-193, and V.iv.184-86.

³⁰ V.iv.180.

³¹ III.ii.24-33 and 78-82.

³² II.i.27-28 and 60-61.

³³ II.i.62-63.

³⁴ III.ii.1-10.

³⁵ III.ii.277-78.

³⁶ I.iii.119-23.



There is a man haunts
the forest, that abuses our young plants with
carving 'Rosalind' on their barks; hangs odes
upon hawthorns, and elegies on brambles; all, forsooth,
deifying the name of Rosalind.³⁷

The ecological sensitivity displayed by Jacques and parodied as such by Rosalind can also be seen in the environmental attitudes of the other urbanites in the play. For instance, for Celia, who has fled with Rosalind from the morally polluted court,³⁸ the Forest of Arden is a place of "liberty" rather than "banishment."³⁹ She has been so impressed by the peace and freedom provided by this natural environment that, like the Duke Senior and his retinue, she easily adapts herself to the new conditions as she says "I like this place, / And willingly could waste my time in it."⁴⁰ Similarly, Oliver, who has come to the Forest of Arden to seek his brother Orlando,⁴¹ is prepared to give up all his urban life and "live and die a shepherd" in it.⁴² All this concern with the ecological and environmental nature of the Forest of Arden reaches a climax at the end of the play when the ecologically over-sensitive Jacques decides not to return to the court together with the Duke Senior and the others, but to continue to live in the forest as an anchorite.⁴³ Obviously, from an environmental point of view, Jacques's ultimate adoption of an ascetic way of life in the natural setting of the Forest of Arden can be regarded as a graphic indication of Shakespeare's own ecological sensitivity.

This sensitivity can also be traced in Shakespeare's other plays. For instance, Ophelia's catalogue of flowers in *Hamlet*, which include rosemary, pansy, fennel, columbine, rue, daisy, and violet,⁴⁴ reveals such a sensitivity. Although Shakespeare uses the flowers as a metaphorical reference to illustrate, from Ophelia's point of view, certain human characteristics such as faithfulness, infidelity, repentance or frustrated love, his choice of them certainly indicates some careful observation of the natural world and a closely sensitive relationship with it. Also the depiction of Ophelia's suicide by drowning herself in the waters of a stream is given through the description of a setting which is ecologically attractive but has a treacherous layout; as Queen Gertrude describes the circumstances of Ophelia's death to her brother Laertes,

There is a willow grows aslant a brook,
That shows his hoar leaves in the glassy stream;
There with fantastic garlands did she come,
Of crow-flowers, nettles, daisies, and long purples,
That liberal shepherds give a grosser name,
But our cold maids do dead men's fingers call them:
There, on the pendent boughs here coronet weeds
Clambering to hang, an envious sliver broke,
When down her weedy trophies and herself
Fell in the weeping brook. Her clothes spread wide,

³⁷ III.ii.382-86.

³⁸ I.iii.45-89 and II.iv.1-15.

³⁹ I.iii.141.

⁴⁰ II.iv.95-96.

⁴¹ III.i.1-8 and IV.iii.77-184.

⁴² V.ii.12-14.

⁴³ V.iv.187-192 and 199-203.

⁴⁴ IV.v.174-85.



And, mermaid-like, awhile they bore her up;
Which time she chanted snatches of old tunes,
As one incapable of her own distress,
Or like a creature native and indu'd
Unto that element; but long it could not be
Till that her garments, heavy with their drink,
Pull'd the poor wretch from her melodious lay
To muddy death.⁴⁵

A different kind of dichotomy which involves, as in the pastoral discourse of *As You Like It*, the juxtaposition of the country and the court in terms of moral values and excellence, constitutes one of the thematic dimensions of *The Winter's Tale*. Especially through the story of Perdita, who was rejected in infancy by her father Leontes, the king of Sicily,⁴⁶ but found and raised as a foundling by the Bohemian shepherds,⁴⁷ virtuous naturalness is set against courtly artificiality; Perdita, who has grown up as a pastoral beauty "of most rare note"⁴⁸ in a physically unpolluted and unspoiled environment, has been tutored by nature whereby she has become the moral embodiment of a naturalness which is unpolluted by courtly artificiality. Hence, her physical beauty metaphorically manifests her moral perfection revealed through her humility, chastity, hospitality, generosity, self-restraint, inborn nobility, and prudence.⁴⁹ Moreover, as one can infer from her debate with the courtly Polixenes, she is ecologically so learned about nature that she demonstrates this through her extensive knowledge of flowers and their seasonal characteristics. For her, carnations, gillyvors, lavenders, mints, savories, marjorams, marigolds, daffodils, violets, primroses, oxlips, and lilies each not only biologically conform for their growth to the conditions of the seasons but also, by their growth, represent the cycle of the seasons.⁵⁰ As in the case of Ophelia in *Hamlet*, so also here Shakespeare presents another catalogue of flowers, which once again reveals his ecological sensitivity.

Finally, Shakespeare's dichotomic depiction of the natural environment not only as an ecologically pristine harmony but also the subversion of this harmony through human manipulation and exploitation can also be seen in *The Tempest*. The play is set in an environment which is ecologically most attractive but is dangerously vulnerable to human manipulation and exploitation. In other words, the distant tropical island, on which Prospero, the deposed duke of Milan, lives in exile as a magician with his daughter Miranda, has a natural setting which gives it a paradisaal appearance; indeed, it has a "subtle, tender, and delicate" climate,⁵¹ and "the air breathes [...] here most sweetly,"⁵² and, as the old councillor Gonzalo puts it, "here is everything advantageous to life."⁵³ However, this ecologically perfect environment is undermined by a fierce storm which Prospero artificially creates through his magical power in order to take his revenge on his enemies, Alonso and his company.⁵⁴

⁴⁵ IV.vii.167-84.

⁴⁶ II.iii.172-82.

⁴⁷ III.iii.69-143 and IV.iii.1 ff.

⁴⁸ IV.i.47.

⁴⁹ Especially IV.iii.1-686 can be read along these moral qualities in Perdita.

⁵⁰ IV.iii.81-127.

⁵¹ II.i.43-44.

⁵² II.i.48-49.

⁵³ II.i.52.

⁵⁴ I.i.1-73.



Indeed, for Miranda, who begs her father to give up his magical manipulation of the forces of nature, the storm becomes a state of utter desolation, in which human survival is made impossible:

If by your art, my dearest father, you have
Put the wild waters in this roar, allay them.
The sky, it seems, would pour down stinking pitch,
But that the sea, mounting to th'welkin's cheek,
Dashes the fire out. O! I have suffer'd
With those that I saw suffer: a brave vessel,
Who had, no doubt, some noble creatures in her,
Dash'd all to pieces. O! The cry did knock
Against my very heart. Poor souls, they perish'd.
Had I been any god of power, I would
Have sunk the sea within the earth, or e'er
It should the good ship so have swallow'd and
The fraughting souls within her.⁵⁵

Parabolically, the storm and its violent effects on humans and nature may be regarded as a graphic representation of the kind of sufferings that we today face through the destruction of the environment. If one were to re-read this storm episode analogically by relating it to our own time, one would tend to see an allegorical affinity between Prospero's manipulation of the forces of nature for a destructive purpose and our abuse of nuclear power, which poses an apocalyptic threat to life and the environment on Earth.

To conclude, Shakespeare was certainly not an environmentalist in the modern sense. It would be anachronistic and unjustifiable to think of Shakespeare in this posture. However, as we have tried to demonstrate above by reference to the environmentally suggestive passages in some of his plays, obviously he was an ecologically sensitive writer and can therefore be related to our environmental literacy. In this respect, one may recall the following statement made by Jill Conway, Kenneth Keniston and Leo Marx in their joint work *Earth, Air, Water, Fire: Humanistic Studies of the Environment*:

If we are to understand and devise effective solutions for today's environmental threats, we must locate them within their larger historical, societal, and cultural setting [qtd Slovic ix].

⁵⁵ II.i.1-13.



In this search for environmental solutions, and also in formulating effective answers to environmental questions, there is a constant need for the nurturing and enhancement of environmental awareness, especially in the young generation. In other words, we need to bring up and train an ecologically sensitive and caring generation. This can be done not only through scientific research and publications but also through the environmental humanities which also include literary scholarship and representation. In this regard, as Howarth [8] has put it,

[while] the scientist's task is to predict, the humanist's task is to remember.
To remember with truth and compassion is to know the past and take steps
toward a viable future.

Therefore, reading and understanding literature in the classroom with an environmental perception has a didactic, paedagogic and inspiring effect on young people. In this respect, Shakespeare can be considered to be a major *exemplum* from the literary past.

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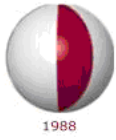
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ENVIRONMENTAL EFFECTS ON THE ARCHIVE PAPERS

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The papermaking process, one of the biggest and most versatile in any industry, is along and very complex process. Paper is built up of at least a million components per gram, mainly fibre and filler particles. Raw materials include fibres that give the paper its mechanical stability, fillers that give optical properties and printability, and a multitude of chemical additives.

Paper has played a vital role in the cultural development of mankind. Archives papers and books are most for our cultural heritage and they may be preservation.

Paper deterioration is still the main problem of libraries and archivists. It is a national problem in many place and requires enormous capital investment. Süleymaniye library at the Istanbul had been tried preservation of paper.

Papers also become increaslingy acidic and deteroration as they age and, paper deteriotaion can be divided in two main groups as internal and external. The origin of external factors can be listed as below:

Temperature and moisture

Radiation(Light)

Pollutants

Biological and chemical

Mechanical.

It is therefore, research and development for preservation and restoration of the archive papers has tried alot of country of world.

The aim of this paper is to give enviroment effect on the life of archive papers and its conservation.

1.Introduction

Paper is fibrous raw material for papermaking. Pulp fibers are usually of vegetables origin, but animal, mineral or synthetic fibers may be used for special applications. Pulps used for chemical conversion into non-paper products are called dissolving pulps. Paper derives its name from the reedy plant, papyrus. The ancient Egyptions produced the world's first writing material by beating and pressing together thin layers of the plant stem[1].

The first authentic papermaking originated in China as early as 105 AD, utilizing a suspension of bamboo or mulberry fibers. The modern pulp and paper mill utilizes wood residuals as the basic raw material [1].



Cellulose: In plant fibers it is the substance cellulose that determines the character of the fiber and permits its use in papermaking. Cellulose is a carbohydrate, meaning that it is composed of carbon, hydrogen and oxygen, with the latter two elements in the same proportion as in water. Cellulose is also a polysaccharide, indicating that it contains many sugar units.

The properties of cellulosic materials are related to DP(Polimerization Degree) of the constituent cellulose molecules. Decreasing the molecular weight below a certain level will cause deterioration in strength [1].

Paper is built up of at least a million components per gram, mainly fiber and filler particles. Raw materials include fibers that give the paper its mechanical stability, fillers that give optical properties and printability, and a multitude of chemical additives. The fiber material is generally wood pulp fiber of mechanical or chemical origin. The paper made from mechanical pulp due to higher lignin content is likely to suffer more from ageing. The filler are of inorganic origin and include kaolin clay, calcium carbonate in the form of chalk or ground limestone, and specialty pigments like titanium dioxide that provide paper of high whiteness and high opacity. The chemical additives include hydrophobic agents that provide water and ink resistance, starch or other water soluble polymers that provide dry or wet strength[2].

The cellulose, like most carbohydrates, can undergo an enormous variety of chemical transformation. The cellulose inside the microfibrils, however, is not easily degraded as the cellulose at the surfaces of the microfibrils and in structurally weakened zones. Three reactive hydroxyl groups two secondary(on carbon atoms in position 2 and 3) and one primary(on carbon atom number 6) attached to each beta-D-glucopyranose unit within the cellulose chain are very important in respect to cellulose degradation[3].

Library and archival materials includes books, papers, and other items which they are made from the variety of components. The environment around the book, is a major concern because unacceptable levels of temperature and humidity will accelerate deterioration. There are two main factors which affect paper deterioration. These are internal and external factors.

2 Internal Factors:

Internal factors are established during the manufacturing process. They are type and quality of the fibers, sizing material and the presence of acidic compounds. Acid hydrolysis of cellulose occurs due to hydrolysis of the papermaker's alum and pulping process used. The potential permanence of paper is the responsibility of the manufacturer. In order to ensure this, the following ingredients should be excluded from the papermaking process:

- Ground wood fibers
- Concentrations of iron
- Copper minerals
- Alum/rosin sizing
- Residual bleaching chemicals
- Acidic compound [4].



3. External Factors:

Besides the internal factors inherent in the papermaking process, there are also external factors which contribute to the deterioration of artists' papers, such as light, temperature and humidity, air pollution and insects.

Paper, like all organic material, is subject to the conditions under which it is used and stored. Therefore, the longevity of works of art on paper, given that the quality of the paper is good, is ultimately the responsibility of the artist and the collector. Due to the expense of handmade, acid-free and buffered paper products, it is certainly worth taking note of the paper enemies which reside within our homes, studios and galleries. With all other factors being equal, works of art on paper will last longer if kept in the dark. Since they cannot be enjoyed and appreciated without light, it is wiser to think of ways in which direct light, with the irreversible chemical changes it imposes on paper, can be minimized [4].

3.1 Light

Light has visible and invisible effects on paper, both of which can cause embrittlement and eventual deterioration. The most obvious visible effect of light is bleaching-the whitening and fading of paper color and some of the colors used to create the image. All light fades works of art on paper and fading is not reversible. Less light means less fading, and not no fading.

While this is occurring, invisible damage is also taking place. The ultraviolet rays in sunlight and fluorescent light cause chemical changes in the paper and accelerate the process of fading. Most of the light energy entering a room is converted to heat, but the minute fraction which is absorbed by paper is responsible for a process called photocatalyzed degradation. Paper which has been sized and exposed to dyes, pigments and dirt is vulnerable to complex photocatalyzed reactions. After oxidation occurs, the fibers in the paper are broken down until they are too short to stay bonded and embrittlement ensues [4].

Rapid and serious deterioration of paper is caused by the oxidation of cellulose brought about by the ultraviolet rays in sunlight and fluorescent light. There are two effects of light on paper that result in its ultimate embrittlement and deterioration. First, it has a bleaching action that causes some whitening of paper and fading of colored papers and certain inks. Second, it causes any lignin, which may be present in the paper, to react with other compounds and turns it yellow or brownish. It is this reaction that results in newspapers' turning yellow on exposure to light. Certain invisible changes also occur at the same time when these visible effects of light are taking place. Fibers in the paper are broken into smaller and smaller units until they are so short they can no longer maintain the bonds necessary to hold the paper together. Some woods bleach under the action of light, some turn yellow and some darken. Unfortunately, the reactions initiated by light continue after the source of the damage has been removed [5].



3.2 Temperature and relative humidity

Temperature refers simply to how hot or cold something is. ideally, the temperature in an archives will not exceed 19 to 20° Celsius (C) (66 to 68° Fahrenheit [F]). Relative humidity (rh) is the amount of water vapour in the air compared with the amount required for saturation (the point where air can hold no more water) at a given temperature. In an archives, the recommended norm is 40 to 45 per cent rh and not above 53 per cent. Too much heat and humidity speeds the growth of mould and increases the chemical deterioration of paper. Hot, dry air makes items brittle and fragile. Even if you cannot achieve the optimum temperature or relative humidity, keep them as constant as possible, because fluctuations can cause more damage than consistently high or consistently low levels



If humidity is too low, it can cause the desiccation and eventual embrittlement of paper. Too much humidity accelerates the growth of mold and the internal decomposition of paper. Mold is nourished by sizing and paper fibers, and can also feed on the binders used in pastels. The presence of rusty-colored patches indicates that foxing chemical action of mold on the metallic salts in the paper due to prolonged, high humidity is occurring. While low temperatures are best suited to the storage of paper products, consistency of temperature is critical. Temperature/humidity fluctuations, called cycling, can often be more detrimental to paper than consistently high temperatures [4].

Cycling weakens, and eventually breaks down, the fibers of paper by causing expansion and contraction due to water contained within it.



3.3 Air pollution.

Large urban and industrial areas promote a process called sulfation, which occurs when flue gas constituents (water, carbon monoxide, sulfur dioxide, etc.) react to form sulfuric acid. Sulfur dioxide gas is absorbed by paper, where it reacts with moisture to create a destructive sulfuric acid problem within the fibers.

This is called acid hydrolysis, the reaction of an organic compound with water in the presence of acid. This process breaks down the cellulose, causing discoloration, embrittlement and disintegration of the paper fibers. At normal temperatures, it occurs very slowly, but at elevated temperatures, the process is greatly accelerated.

Sulfuric acid does not evaporate or leave the paper, even after removal from the contaminated area.

Other major pollutants include industrial smoke and particulate matter, photochemical oxidants and haze, motor vehicle emissions, solar radiation, temperature inversions and sodium chloride (prevalent in coastal areas). Solid particles found in polluted air accelerate the deterioration of paper. Dust and grime are abrasive to the surface of paper. In the presence of moisture and in combination with the acid droplets around dirt, they promote a corrosive process which penetrates the fibers as well [4].



Many compounds are not dangerous themselves, but they promote paper deterioration because they form acids when they mix with atmospheric moisture.

If you live in the urban environment, the only way to combat air contaminants is through an air conditioning and filtration system.

While it is initially an expensive outlay, air conditioning with proper filtration will reduce restoration costs and capital losses of objects, and prove a good investment in time [4].



3.4 Insects.

Paper contains ingredients, such as gelatin and glue sizing, wood pulp and flour paste, which are appealing to insects. Insects such as cockroaches, silverfish, termites and woodworms are the most common destroyers of paper, and they feed the cellulose and starch in books and papers and other archival material. Silverfish love dark places and can make nice little homes inside frames as they nibble on sizing and wood pulp. Termites and woodworms like anything made of cellulose, as well as wood, so a rag paper picture in a wood frame is susceptible. Cockroaches can cause damage to paper by eating glue sizing or any painting media containing sugar. To help prevent infestation of harmful insects [4].



Fungi, mould and mildew weaken materials, causing inks to fade, material to fall apart, and brown spots (foxing) to appear. Such growths are caused by moisture in the air.

4. Results

Librarians and archivists are concerned about pages that become brittle and disintegrated as a consequence of ageing. This is a national problem in many countries at their valuable collections and archival materials.

There are many libraries and museums in the Istanbul that they have a wealthy archive material. One important of these is Süleymaniye Library and it had been founded in 1918. Süleymaniye Library has big collections. This treasure of Turkish-Islamic culture, consist of 117022 works, including 67350 manuscripts and 49663 books printed in Arabic characters.

Istanbul's Süleymaniye Library, which, with its peerless architecture and unrivalled collection of manuscripts, houses some 90% of the Turkish-Islamic works. Table 1 shown location of archival materials in Istanbul.



Table 1 Locations of Archival Materials in Istanbul

Museums	Palaces	Libraries	Universities	Mufti	Premiership	Title cadastral
Nautical Museum	Dolmabahçe palace	Atatürk Library	İstanbul University, Letters Fac.	İstanbul Mufti Meşahat Archive	Premiership Ottoman Archive	Title and Cadastral
Harbiye Military Museum	Topkapı palace	Süleymaniye Library	Mimar Sinan University,- Art Fac.			
Koç Museum	Yıldız palace	Atıf Efendi Library				
Sabancı Museum		Istanbul Public Library				
Istanbul Archeological Museum		Nuruosmaniye Library				
		Ragıp Paşa Library				
		Köprülü Library				

Ten of books of Süleymaniye Library and other libraries and museum are examined daily in the library's book repair service. Books on the diagnosis of disease are repaired one by one. As result, archive materials and documents are stored and controlled under close monitoring. A few proposal for environmental conditions:

- Avoid hanging pictures on a wall directly opposite windows, since the light there is greater.
- Never work on, or hang, pictures in direct sunlight.
- Cover your fluorescent lights with protective sleeves which filter out radiation.
- Turn off interior lights when they are not in use.
- Close windows blinds to eliminate unnecessary UV radiation and keep them closed.
- Maintain the lowest, most consistent temperature you possibly can between 60-70 F.
- Keep humidity between 45-70%.
- Periodically cleaning the stacks will cut down on particulate pollution.
- Use screens on windows and doors to minimize insects[4,6].



5 Literature

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- 6- <http://palimpsest.stanford.edu/byauth/maravilla/deterioration-causes.html>, Cause of deterioration of Paper.



READER RESPONSE THEORY AND ENVIRONMENTAL AWARENESS

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This paper will focus on the reader, the experience of reading, and the readers' responses to the literary texts, and will argue for their crucial importance in determining the role of human beings in the process of attaining "environmental awareness". The task of this process is to understand how people engage with the problems of nature within their interpretative communities. I will emphasize the importance of developing new environmentally-oriented interpretative strategies which can create environmentally aware reader responses both to the natural environment and to the literary texts, and determine meaning making processes that can help change the present public perceptions about our world which are still anthropocentric, and hence grounded in a dualist mindset. With the new interpretative strategies of reading that aim at creating environmental awareness in the readers, the readers can achieve a "fusion of horizons" between the natural environment and the world of literature. Therefore the reading process, in this sense, must be re-theorized towards forming a critical planetary reading; and re-fashioning Stanley Fish's theory of the "interpretative communities" will be important in producing and sustaining a critical awareness about the problems of the natural environment.

Fish argues that the interpretation of texts depends on the readers' socio-cultural backgrounds which constitute interpretative communities that all readers share. Readers, for Fish, are conditioned by these communities. For him, formal devices of a literary text do not direct the reading experience but are created by the whole process of expectations and conventions involved in the process of reading. Interpretations are not a matter of personal psychology but of social education. Hence, it is these strategies that exist prior to the act of reading, and that determine how we read the texts. As the power of literature is irrefutable, Fish's theory of the 'interpretative community' can be re-thought and re-theorized in order to raise a true environmental consciousness. It is not to be understood, however, as a matter of reading "green literature" only, but as a new theoretical approach about bringing forth concrete solutions to the environmental problems which threaten our world.



The experience of reading, and the readers' responses to literary texts have crucial importance in determining the role of human beings in the process of attaining "environmental awareness". The task of this process is to understand how people engage with the ecological problems, issues and themes of nature within their interpretative communities. In this paper, the emphasis will be on the importance of developing new environmentally-oriented interpretative strategies which can create environmentally aware reader responses both to the natural environment and to literary texts, and determine meaning making processes that can help change the present public perceptions about our world which are still anthropocentric, and hence grounded in a dualistic mindset. With the new interpretative strategies of reading that aim at creating environmental awareness in the readers, the readers can achieve what Jauss calls "fusion of horizons," adapted from Gadamer concerning our situatedness in the world, between the natural environment and the world of literature. Horizon must be understood as our situation into which we bring our prejudices and pre conceptions, which affect our judgments of the world we live in. In other words, in understanding the world we fuse our horizon with a past horizon. Jauss borrows this idea and develops his concept, "horizon of expectations" which is slightly different from Gadamer's conceptualization. By this concept Jauss refers to the reader carrying into a given text -whether it is literary or created in another medium- a specific mind-set or system of references. That means, according to Jauss, all texts are read against a horizon of expectation. If we re-think this notion in terms of environmentally sensitive readings, we can posit that an ecologically aware reader can reconstruct the present anthropocentric horizon if new ecological horizons of expectations are developed. As a consequence an ecologically oriented aesthetic of reception can be formulated. He also draws attention to the meaning making process where the relationship between the reader and the text plays a major role:

Textual analysis focuses on the scope for "negation" and "opposition" on part of the audience. A "text" – be a movie, a book or other creative work- is not simply passively accepted by the audience, but that the reader/ viewer interprets the meanings of the text based on their individual cultural background and life experiences. In essence, the meaning of a text is not inherent within the text itself, but is created within the relationship between the text and the reader. [Jauss 233]

In his *Toward an Aesthetic of Reception*, Jauss strongly reacts against those who see the literary text as a "monumental" [108] object, or who see meanings embedded within literature as fixed. The reading process, in this sense, can be re-theorized towards forming a critical planetary reading. The relationship between the reader and text resembles the relationship between the environment and literature. In other words, if the majority of readers employ ecocentric reading strategies, this might affect our interactions with natural world, and transform our responses to the world as well as our socio-cultural, economic and political decisions and actions. Hence closely related to an objective as such is Stanley Fish's theory of the "interpretative communities." Thus, re-fashioning "interpretative communities" in this sense will be important in producing and sustaining a critical awareness about the problems concerning the natural environments.



Fish argues that the interpretation of texts depends on the readers' socio-cultural backgrounds, which constitute interpretative communities that all readers share. For Fish, these communities condition readers and formal devices of a literary text do not direct the reading experience but are created by the whole process of expectations and conventions involved in the process of reading. Interpretations are not a matter of personal psychology but of social education. Hence, it is these strategies that exist prior to the act of reading, and that determine how we read the texts. In this paradigmatic framework, then, it would not be wrong to claim that our present interpretive communities are regulated and shaped by the so-called dualistic worldview. Therefore, transforming interpretive communities to ecologically grounded ones is of crucial significance. When communities become ecocentric, as a consequence interpretive strategies gradually re-shape themselves as well. In this respect, as the power of literature is irrefutable, Fish's theory of the 'interpretative community' can be re-thought and re-theorized in terms of our perceptions of and relationships with the natural environment in order to raise a true environmental consciousness in the reading public. It is not to be understood, however, as a matter of reading "green literature" only, but as a new theoretical approach about bringing forth concrete solutions to the environmental problems, which threaten our world on a global scale. In this respect, creating environmentally sensitive interpretive communities may lead to the transformations of our responses to the natural world, and thus to correcting our understanding of the relations between the human and non human world. In other words, the new interpretive communities lead to a radical change in consciousness and knowledge that recognize the importance of an ecologically viable international approach to Earth.

Stanley Fish's notable essay 'Is There A Text In This Class? The Authority of Interpretive Communities' is concerned with the meaning making process. He strongly believes in the instability of the text and the unavailability of certain determinate meanings. This situation leads Fish to the idea that 'no text can mean anything in particular'[Fish 525], and no one can ever say just what someone means by something he writes. For him, there is no ultimate true meaning in the ordinary sense of speaking, hearing and reading. Interpretations come into being as a result of the established norms of the public. However, he denies the establishment or settlement of these norms in language. People hear utterances according to "certain assumed purposes and goals" [Fish 525], which exist in the institutional structure in a way that no one can be bound to the rules and fixed meanings of a language system, but to the assumptions of the institution. Thus, the reader Fish talks about is "the informed reader" who "does everything within his power to make him informed"[Fish 136]. According to him, one hears an utterance within the knowledge of its purposes and concerns. Thus, "interpretive strategies" are of high importance in conveying the meanings so that interpretation becomes "a matter of individual and private construing none of which is subject to challenge or corrections" [Fish 523]. For him, communication occurs in the existence of situations, which are occupied by a structure of assumptions. On the other hand, meaning for him is always determinate and decidable because its constrained by and built into a context of interpretation. The reader, who is at once interpreter and interpretation, is always situated inside a system of language, inside a context of discursive practices in which there are inscribed values, interests, attitudes, and beliefs. [Fraud 109]



Thus, according to Fish, everybody lives in different socio-cultural areas and everyone has his own beliefs. However none can be a relativist as it is not possible for him to put a distance between his beliefs and the assumptions of others. Even if the focus is changed to a more generalized belief, the final order of certainty will be achieved. People act according to their personal, as well as social norms and values which may change in time and be replaced by a new set of norms and values. He writes, "interpretation is not the art of construing but the art of constructing. Interpreters do not decode poems, they make them." [Fish 537]. Indeed, "all objects are made and not found and ... made by the interpretive strategies we set in motion." [531]. Thus, the text or the meaning can only be constructed by the interpretive assumptions.

Fish believes that an interpretation is successful as far as it is persuasive, and interpretations are shared as 'interpretive communities' share particular sets of assumptions. Fish in his essay states that members of the same community will necessarily agree as they will perceive everything according to the assumed purposes and goals of the community. To specify it, he states, meanings are the property neither of fixed and stable texts nor free and independent readers but of interpretive communities that are responsible both for the shape of the reader's activities and for the texts those activities produce. [Fish 322]

By his concept 'interpretive communities', then, Fish underlines the fact that "[the reader's] perceptions are not unique, individual but conventional and communal" [Fraud 107].

Although not thoroughly an acknowledged work, Louise Rosenblatt's *Literature as Exploration* is as significant as Fish's to show the multi-dimensional aspect of the reading process in which social and private perspectives are of importance. In the Preface to her book, she puts emphasis on the importance of different reading processes and states that the "study of literature can have a very real, and even central, relation to the points on the social and cultural life" [ix]. Her ideas are important in order to create socially conscious informed readers who are aware of the danger of sustainability of environment due to the ongoing wars, all aspects of the pollutions and terror, which contaminate the Earth. She stresses the relationship between "literature and [the reader's] social, [...] and cultural worlds and the need of [the reader] to have an interdisciplinary knowledge of the social sciences" [Clifford 37]. She also defines what happens in the act of reading, declaring that "[the text] exists in interaction with specific minds, and the reading any literary work is a unique experience involving the mind and emotions of some particular reader." [Rosenblatt 16]. In her *The Reader, the Text, the Poem: Transactional Theory of Literary Work* [1978], she explains what the reader does in the reading process:

What the reader has elicited from the text up to any point generates receptivity to certain kinds of ideas, overtones, or attitudes. Perhaps one can think of this as an altering of certain areas of memory, a stirring up of certain reservations of experience, knowledge, and feeling. As the reading proceeds, attention will be fixed on the reverberations or implications that result from fulfillment or frustration of those expectations. [Rosenblatt 54]



She expands the limits of reading process and develops “the transactional theory of reading” [Rosenblatt 23] in which she envisages [the text] as an experience shaped by the reader under the guidance of the text. For her, the meaning comes about through a “transaction between a reader and a text” [Rosenblatt 24] :

The need for a public of readers is able to “participate fully in the [reading] experience” – readers able to provide a nurturing, free environment for [artists] of the word. Their texts possess, I believed, the highest potentialities for bringing the whole human personality, [...] “into activity”. [Rosenblatt xi]

Fish’s and Rosenblatt’s reading theories, when read in the light of environmental ethics, actually assign great responsibilities to their reformed readers in attaining sustainability of environmental awareness. The readers should take their active part in the reading process and should question the “the human limits to comprehend and manage some threshold of scale and complexity” [Orr 36] of the world and ask for quality in every aspect of life.

Rising scale also increases the costs of carelessness. Preoccupation with quantity replaces the concern for quality: the farm becomes an agribusiness, the city become a megalopolis, the shop becomes a corporation, tools become complicated technologies, the legitimate concern for livelihood becomes an obsession with growth, and weapons become instruments of total destruction. [Orr 37]

The ongoing changes both in technological and moral life threaten the sustainability of the natural environments. Disorder, breakdown of moral responsibility to nature, ugliness and disease that pervade the world communities today are considered to be the usual outcomes of the technological developments. In the process of reading not only literary and environmental texts, but also of the present reality itself, the readers should be aware of this destructive power of the new technological developments. Within their interpretive communities, they should question the negative effects of these developments in order to raise both environmental consciousness and their voice against the disparaging control of technology. It should not be underestimated that “pollution overwhelms local ecosystems, public health deteriorates, transportation becomes congested, civility declines, and crime increases” [Lopez 258]. By questioning these dichotomies, people would be aware not only of the dilemmas between nature/pollution, individual/ society, contemplation/ action through which we perceive the world today. This reading and questioning process draws attention to the self-realization and the self-action of the reader to the environmental disorders. This emphasis on self-action is humanity’s “not only necessary but inevitable” [Gordon 159] initiation to a new understanding of the world.

It allows for self-realization by strict attention to the natural process of the moment in the localized present. The emphasis on action subverts the accepted truths of contemplation and reflections. Through their readings, the informed readers will be able to present their ideas about how they see the world. As nature writers embrace the idea notion that “the eye is the mind’s eye. [Lester 244]



According to Orr, efforts to build a sustainable society on assumptions of human rationality must be regarded as partial solutions and first steps. Acknowledgement of social traps and designing policies to avoid them in the first place would, however, constitute important steps in building a sustainable society [6]. Gregory Bateson, supporting the idea of Orr, goes one step forward and underlines the importance of “the concept of interrelatedness”[124]. For him, human beings, [thus the readers], are not outside the ecosystem. They are always and inevitably a part of it. The readers are the makers and participants in reality, not just observers and should actively take their places through their reading processes in the sustainability of the ecological environment. Thus, it would not be wrong to claim that interpretive communities and transaction between a reader and a text are the powerful techniques that direct readers’ perceptions in which “language is a sociological strain of criticism” where “literature, and culture have much to answer for when faced with environmental catastrophe and human misery” as “they direct the reader’s perceptions, and are guilty participants in the destruction of nature” [Raglon 248].

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ENVIRONMENTALISM VS. COLONIALISM

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This article discusses how the question of environment is viewed by Wole Soyinka in *A Dance of the Forests* (1960) which gives vivid details of the destruction of the nature by the colonial powers such as by Britain. The effects of capitalism and colonialism upon the virgin lands of Africa is depicted in detail and as an alternative, Soyinka suggests the elevation of the moral and social values (to increase the consciousness about nature and environment) in opposition to materialism and colonialism. Otherwise, the destruction of nature and environment makes a Boomerang effect and in the long run and due to the each and all concept, it shoots the colonizer one day as well. In order not to have a gloomy future, the destructive nature of colonialists can be replaced with the power of environmentalists which is a life-giving one. Thus, with the help of cultural, educational and social activities environmental-consciousness may be raised in the future generations.

Environmentalism vs. Colonialism

This article discusses how the question of environment is viewed by Wole Soyinka in *A Dance of the Forests* (1960) which gives vivid details of the destruction of the nature by the colonial powers such as by Britain. The effects of capitalism and colonialism upon the virgin lands of Africa is depicted in detail and as an alternative, Soyinka suggests the elevation of the moral and social values to increase the consciousness about nature and environment in opposition to materialism and colonialism since

[f]rom its very earliest beginnings in the late fifteenth and early sixteenth centuries, capitalism has always been a world system, dividing the globe into center and periphery. The existence of such a hierarchy has meant that the people and the ecosystems of the periphery have been treated as appendages to the growth requirements of the advanced capitalist center. Each stage of capitalist development-mercantilism, early industrial capitalism and monopoly capitalism-has seen the expansion of this imperialist relation to the planet (Foster 85).

Thus, capitalism and colonialism go hand in hand. This is explicitly stated by the British statesman Cecil Rhodes and according to him, “the motivation behind the British imperialism” is to find raw materials, “[w]e must find new lands from which we can easily obtain raw materials and at the same time exploit the cheap slave labour that is available from the natives of the colonies. The colonies would also provide a dumping ground for the surplus goods produced in our factories” (qtd.in Foster 87-88) says he. Besides these, imperialism is also seen as a remedy by the economists for the economic crises in Europe and the United States. Therefore, they continue to exploit the natural sources in Africa and in the distant lands.



But these politicians and economists ignore the fact that the destruction of nature and environment may make a boomerang effect and in the long run due to each and all concept, it may shoot the colonizer one day as well. "[T]he basic law of ecology; namely that everything is connected to everything else and that one cannot change just one thing in nature" (Goudie 3) should be taken into consideration due to the fact that even a small change in nature causes and triggers many other changes. Mary Somerville (1780-1872), a physical geographer, explains this natural law with a simple example. One day, "[a] farmer sees the rook pecking a little of his grain, or digging at the roots of the springing corn, and poisons all his neighbourhood. A few years after he is surprised to find his crop destroyed by grubs" (qtd.in Goudie 3). Keeping all this in mind, in order not to have a gloomy future, the destructive nature of colonialists can be replaced with the power of environmentalists which is a life-giving one. Thus, with the help of cultural, educational and social activities environmental-consciousness may be raised in the future generations. According to Friedrich Engels the next phase will be in this direction since he believes that "destructive exploitation of resources leads of necessity to foresight and to improvements, and that after an initial phase of ruthless exploitation and resulting deprivation measures would...lead to conservation and improvement measures" (Goudie 5). In relation to this, in *A Dance of the Forests* (1960), the forest dwellers go through a change and at the end, they seem to be more conscious about themselves and about nature.

A Dance of the Forests opens with the gathering of the Tribes to which "the human community [and] neighbors of the forest dwellers"(Maduakor 176) are invited to celebrate their past. They want Demoke, the Carver to elaborate the totem to make this gathering unforgettable and to make it more glorious. Moreover, they want Forest Father to send them illustrious ancestors like "the builders of the empires. The descendants of our great nobility...symbolizing all that is noble in our nation"(Soyinka 31).However, to their surprise they come face to face with death people such as Dead Man and Dead Woman, who were violently killed in the past and who were called by Aroni, Forest Father's assistant, as they were exposed to unfair treatments and as they have some relationships with the living people in the forest and as they wanted to create a better society. Before the confrontation of all these people, they begin to question themselves and their past deeds, "Aroni means to let the humans judge themselves" (Soyinka 42) in the forest. Soyinka draws a parallel between the journey into the forest and the journey into the inner selves. Keeping the Freudian concept of forest in mind, it might be suggested that forest may stand for the psyche and for the collective consciousness of the humanity. During this journey, they go through a change and gain self knowledge as a result of their confrontation with the past and with the spiritual and natural creatures of the forest. One of the things that they become more conscious is the environmental issues. In relation to this, "the theme of pollution is brought forth by Eshuoro...[he] deplores man's desecration of nature. The gods have been evicted from the forest and the trees uprooted by the wheel of progress" (Maduakor 189-190). Besides, characters also complain about the noise pollution and look for silent places, "I merely fled from the noise. I suppose we all did" (Soyinka 11) says Obaneji.



Apart from these, Eshuoro complains that “when humans preserve a little bush behind their homes, it is only because they want somewhere for their garbage-dead dogs and human excreta”(Soyinka 41). Upon this, Obi Maduakor in his essay argues that “houses and roads have been built where forests once stood. Closely allied to the theme of pollution is that of urbanization. The cities are congested, and the economic strains imposed on the city-dwellers by the new cash economy destroy the concept of the family” (190). Obi Maduakor’s ideas about family should not be neglected and this may be seen clearly in the case of Rola since she calls her relations “a pack of dirty, yelling grandmas and fleabitten children” (Soyinka 9). She has contempt for one of the fundamental virtues of Yoruba cultural heritage, the extended family system, “this whole family business sickens me. Let everybody lead their own lives” (Soyinka 9) says Rola. Therefore, it can be concluded that colonial urban culture destroys the concept of extended family in Yoruba culture, as Western culture emphasizes individualism. The reference to the institution of family may be an influence of Soyinka’s own life to his work. In an interview, Soyinka explains that “...by that I mean the extended family, family in the sense in which ours was a large one. I was constantly surrounded, I recall, by aunts, uncles, my father’s intellectual companions, all of them raconteurs of some sort or the other. They recounted episodes involving themselves, battles, conflicts. I grew up in an atmosphere where words were an integral part of culture...” (<http://globetrotter.berkeley.edu/Elberg/Soyinka/soyinka-con4.html>) and he may want to preserve the culture of Nigerian extended family so that they would not lose their nature friendly indigenous culture. Notice that scientists and environmentalists “stress the importance of indigenous knowledge in preserving biodiversity and raises the spectre of its loss... An observer argues that

The extinction of biological diversity is inextricably linked with the destruction of cultural diversity. With the loss of native cultures, there is also disappearing the vital and important knowledge of a way of living in balance with the earth and the value system in which it is encoded. To approach the process of restoration, it is essential to learn to see the earth through native eyes. (qtd. in Brosius 298)

Hence it might be deduced that everything in the universe is related with each other and one change triggers another change in the universal system. In Nigeria, the destruction of the forest by timber companies, by railroads and by urbanization paved the way for the destruction of the families as well and finally Rola becomes a prostitute. With the urbanization, capitalism comes to Nigeria and as a result of capitalism, individualism gains importance and the dissolution of the families begins. Thus, every member of the family has to find a way to survive without considering the other members of the family. This indifference and lack of communication among the family members may lead to the loss of moral values as it happens in the case of Rola. Hence Rola earns her living through prostitution. Soyinka’s choice of prostitution as an occupation for Rola is not a coincidence and it has a significance. Rola is in the present a whore as she was in the past (Mata Kharibu’s adulterous queen), in other words she is there to gratify the sexual needs of men and then to be disposed of just like Nigeria. Britain leaves Nigeria in 1960, when there is no much benefit in staying there. Thus, there is a parallel between the exploitation of women by capitalism and the exploitation of Nigeria by colonialism.



Apart from indigenous women, indigenous men are also open to exploitation. Soyinka refers to this fact through the slave-dealer in the play. He puts the lives of slaves in danger by carrying them in unsuitable ships for the wide-seas. This exemplifies Frantz Fanon's and Albert Memmi's argument that the black men are not perceived as humanbeings by the white men and therefore they are disposable. Thus, the slave trader puts many black men into the ship like animals and he buys and sells them like a commodity, and he gets advantage of them both physically and economically.

Yet, the worst is to come and many of the slaves are castrated. One of them was a warrior who was punished by the king because of his belief in free-speech. His castration may be interpreted as his loss of his political power as he is reduced to the state of a political eunuch without freedom and power. Moreover, the castration of the warrior may be taken as an extension of the colonial state policy which exploits natural sources regardless of the danger of the extinction of some species. Parallel to this, the fertility of the warrior and the possibility of having offsprings in the future are prevented by the king. Here, Soyinka draws a parallel between the castration of the warrior and the colonization of Nigeria since natural sources of her are controlled by Britain. The pregnancy of the Dead woman with the Half-Child may stand for the emerging of the environmental consciousness against the capitalism and for the emerging of the national consciousness against colonialism. Foster claims that "[j]ust as the Industrial Revolution made possible the subjection of labor to capital, so it also made possible the subjection of nature to capital" (92) and this situation should be reversed by the environmentalists so that capital should be subjected to nature.

In *A Dance of the Forests* the possibility of having a better future lies in individual and social change. Looking back their past and their mistakes, Demoke and Rola go through a change and achieve self-knowledge. Hence, they begin to be more conscious about themselves and the society in which they live in. To exemplify, the construction of a motor road in the forest and his job of carving woods make Demoke uneasy since they are harmful to nature and this is stated by Demoke himself in the following sentence, "[w]hen I finished it [the totem], the grove was cleared of all the other trees, the bush was razed and a motor road built right upto it. It looked different. It [the totem] was no longer my work. I fled from it" (Soyinka 11). Furthermore, in the play Soyinka prepares dark ends for the people who destroy nature, accordingly, the fall of the apprentice from the tree may be seen as an act of revenge by nature. Because that is the end which waits the people who destroy nature. Anti-environmentalists do not know that by destroying nature, in fact they are destroying themselves as sooner or later they will be influenced negatively from the changes in nature with regard to each and all concept. Below Eshuoro comments on this issue:

Demoke, son and son again to pious carvers,
Have you lost fear? Demoke, renegade, beware
The slanted eye of night. Beware
The anger of the silent wind that rustles
Not a leaf. I'll be revenged. Eshuoro, I,
I'll be revenged, I'll be revenged...
(Soyinka 44).



On the other hand, if only enlightened people like Rola and Demoke influence their society, they may be helpful in raising consciousness in environmental issues in opposition to materialism and colonialism. In the play, Soyinka underlines the fact that past, present and future are interrelated to each other and if they immediately take action, then they would make sure that the future would be better and brighter. Rola and the forest-dwellers have the capacity for change.

It all depends on them as Aroni puts it; "Let the future judge the living by reversal of its path or by stubborn continuation" (Soyinka, 43). Thus, they may continue to destroy the environment stubbornly or they may follow the other way. However, *A Dance of the Forests* (1960) ends hopefully so that the inhabitants of the forest would establish a healthy environment for themselves. Their main target is the railroads and the factories. John Bellamy Foster in *the Vulnerable Planet* states that

[a]s bird species vanished, bison herds disappeared, and forests became mere memories, more and more people, particularly in the growing urban centers of the country, became concerned about conservation. The great enemies of nature in the popular view were the land-grabbing railroads and large logging companies. The conservation movement thus received much of its impetus from populist attacks on railroads, Gilded Age capital, and big business (74-75).

In *A Dance of the Forests* (1960), Old Man attracts the attention of the readers to the air pollution caused by cars and says, "...the Chimney [nickname of the car] ought to do it. When that monster travels at anything over two miles per hour you can't see the world for smoke or smell a latrine for petrol fumes" (Soyinka 30). Thus, the necessity of the protection of the forest to preserve the variety of the living things in it and the degradation of the living things in the forest are pointed out. In order to do so, the past habits should be left and instead a new page should be opened to construct a nature friendly society. Within this context, the Half-Child in the play may be taken as a symbol for the rising of the environmental consciousness since it is in the way of emerging and not fully developed just like the Half-Child is.

Besides, the title of the play is significant. Dance may immediately be linked with festivals and celebrations and it is the dance of the forests and forests may be associated with regeneration. Thus forest celebrates her rebirth and regeneration with a dance as people begin to recognize the value and importance of the forest, nature and the whole environment. Another major symbol in the play is the totem and it becomes the symbol of death taking into consideration that Oremole falls to his death from the top of the totem and Demoke also falls from the totem when Eshuoro sets it on fire. Notice that totem is made by carving the trees in the forest and this might show that these people who carve and kill trees also pave the way for their own destruction, death too.



Consequently, Soyinka suggests the elevation of the moral and social values to increase the consciousness about nature and environment in opposition to materialism and colonialism. To achieve these ends, there is a long way to go and the urgent ones may be listed as follows. First of all, Nigeria should get rid of the colonial rule which exploits her natural sources. Then, indigenous women should get rid of prostitution, which is one of the yokes of capitalism. And they can do this by returning to their own roots, by using their indigenous culture as it is suggested by Brosius above. Thus, the degradation of human beings, animals and plants under capitalism and colonialism should not be ignored and people should be more alert towards the environmental issues. Therefore, the necessity of the protection of the forests to preserve the variety of the living things and their culture and in relation to this, the moral values of them like the institution of family and of showing respect to nature is underlined in *A Dance of the Forests* (1960) .

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EFFECTS OF THE LANDSLIDES ON THE ENVIRONMENT: SOME TYPICAL LANDSLIDE EXAMPLES FROM TURKEY

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In Turkey, there are quite many landslides which destroy towns and villages causing substantial damages and deaths. These landslides are caused not only by natural forces but also sometimes human interferences. An example of human interferences is the excavations that disturb slope stability. A good example for the sever effect of natural forces can be given from the Black Sea Region of Turkey. In this part of the country, amount of annual rain fall is quite high, for example it reaches up to 2000 mm/year in Rize. Therefore mechanical and chemical weathering gradually disturbs the cohesion of the rocks in this region. In April 1985, for example, landslides destroyed many villages around the rural areas of the cities of Sinop and Kastamonu. Another such dramatic event occurred in April 1988, on the main road of Trabzon and Gümüşhane. A great avalanche blocked the road and the casualty was quite high: 62 deaths. The earthquake of November 12, 1999, destroyed half of the Ankara-İstanbul highway in Bolu Mountain passage. The most important problem regarding Ispir dam site is the reactivation of landslides on the right slope. The Karakaya Dam is constructed on the Euphrates River. On the downstream side of the right slope, the Tillo-Bego-Senketo landslides have been an important risk to the dam. In north-eastern Turkey, along the Tortum Creek, there is an example of useful landslide. The volcanogenic and carbonate-bearing flysch materials' landslide obstructed the Tortum Creek and made a 200 m high natural dam. It is being used by installation of a hydroelectric power plant.

Key words: *landslide, avalanche, reservoir, weathering*

Introduction

In Turkey, there are quite many landslides which destroyed towns and villages. This paper can not cover all these landslides; but, some typical examples will be discussed here. The abundance of the landslides in Black Sea Region is very famous especially in April. The melting snow and high level of rainfall are responsible of this situation. However, earthquakes can also trigger some landslides.

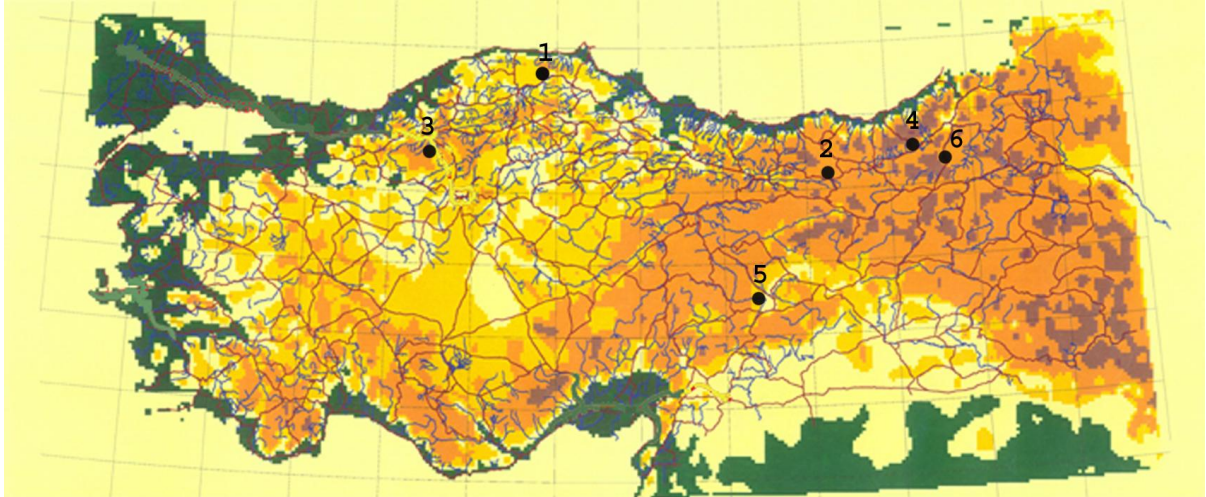


Figure 1 Location map of investigated areas. 1: Sinop-Kastamonu regions, 2: Çatak Landslide, 3: Bolu Mountain Landslide, 4: Ispir Reservoir Landslides, 5: Tillo-Bego-Senketo Landslides, 6: Tortum Landslide.



Figure2 The base of the house seen in the picture has been at the top of the hill but was displaced due to landslide



Figure 3 An example of rotational landslide.



Figs. 4-5 A totally destroyed section of a village due to landslide.

Sinop and Kastamonu Regions

In April 1985, landslides destroyed many villages around the rural areas of the cities of Sinop and Kastamonu. The melting snow after winter and high level of rainfall decreased the shearing resistance of the rocks and soils. The base rock is the alternations of sandstone, siltstone, marl and claystone. The main type of the movement was rotational sliding.



Figs. 6-7 Damaged and tilted houses with respect to vertical position due to landslide.



Figure 8 A portion of land which is displaced vertically about 5-6 meters due to landslide.



Figure 9 The houses in front of the one seen in the picture has been destroyed completely in the landslide. The one in the picture hangs at the verge of cliff.



Figures 10-11 Damaged houses and rotational sliding cracks formed on surrounding land.

Çatak Landslide

Another such dramatic event occurred in April 1988. During a night, the travellers realised some rockfalls on the road on their way near the village of Çatak between Trabzon and Gümüşhane cities. Therefore they decided to stop their journey at a nearby restaurant to continue safely in the following morning. However, a great avalanche occurred at dawn of following night. Tons of rocks and soils, blocked the road and changed the course of a nearby river forcing it to flow over the village's cemetery and destroyed the waiting cars, the restaurant, killed the travellers staying in there. The casualty was quite high: 62 deaths. The possible reason of this avalanche was the road excavation which disturbed the slope stability. The excavation was made vertical instead of a proper slope gradient. Also high level rainfall might have aided this event. Main lithologies of the avalanche are the Upper Cretaceous age lava flows, tuffs and agglomerates.



Figs. 12-13 Blocked road and a river which has changed its bed due to landslide



Figure 14 The original bed of the river which has changed due to landslide.



Figure 15 Excavation work going on to dig out dead and machinery buried under ground during the landslide.

Bolu Mountain Landslide

The earthquake of November 12, 1999, destroyed half of the Ankara-Istanbul highway in Bolu Mountain passage. Fortunately, no casualties occurred because there were no traffic on the road at the time of the slide. The base rock is the alternation of claystone, siltstone, limestone, gypsum and marl of Middle and Upper Eocene age. It was noticed that the mechanical and chemical weathering is very high at a nearby road cut. Also, this region is not far from the North Anatolian Fault. So, this fault intensely deformed the Bolu Mountain rocks. Because of the earthquake of November 12, 1999, on this fault an important part of the Bolu Mountain highway tunnels destroyed as well.



Figure 16 A landslide on Bolu-Istanbul highway which destroyed half of the highway.



The Landslides of Ispir Dam's Reservoir

Çoruh River is the most important river of north-eastern Turkey, Preliminary studies, aiming to determine the energy potential of this river, have resulted in selection of eleven dam sites. Ispir dam site is one of the dam's which is located on the granitic rocks. At the right side (south) of the Ispir reservoir, Jurassic and Cretaceous aged Pugey formation and Plio-Quaternary aged Gullubag formation crop out. The most important problem regarding Ispir dam site is the reactivation of landslides on the right slope. The Pugey formation, which consists of dominantly limestones and marl, is the major source of these landslides. With the erosion of the marl levels in the formation, the stability and strength of the limestone reduced, causing it to fail as rock falls. In addition to that, the strike and dip of the layers, joints, faults, slope angle, groundwater effects, freezing and melting are other important factors leading to this result. Also, Gullubag formation, which mainly consists of salty and gypsiferous mudstone, sandstone and conglomerates, is the other reason for these landslides. In addition to those slides, sliding of large blocks along the discontinuity surfaces is also expected in this reservoir. The grain size gets smaller along the downslope of the accumulated material on the slopes. The new landslides develop due to the toe erosion by the Çoruh River. In the spring of 2000, these landslides blocked the Çoruh River and hence led to the formation of a temporary reservoir.

These landslides have caused officials to abandon Ispir dam site Project. Instead, a new dam axis has been projected at upstream side of these landslides. Also, a 18600 m power tunnel has been projected through sound volcanic and magmatic rocks on the left slope to prevent the downstream landslides which might form a natural dam causing the power plant installation remain under flood.



Figure 17 The abandoned Ispir Dam site **Figure 18 Ispir reservoirs' landslides.**
due to landslides in its reservoir.



Figure 19 Ispir reservoirs' landslides.

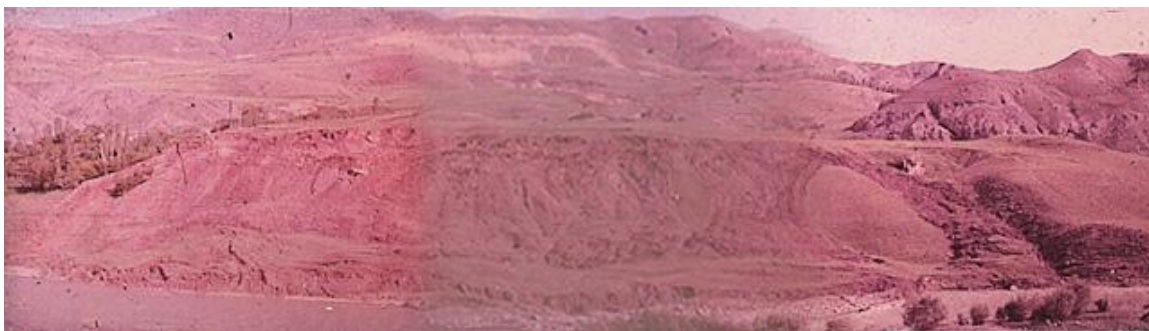


Figure 20 Ispir reservoirs' landslides.

Tillo-Bego-Senketo Landslides

Karakaya, a concrete gravity and arch dam, is constructed on the Karakaya metamorphic rocks on the Euphrates River. There has not been any significant problem with the dam site, but on the downstream side of right slope, the Tillo-Bego-Senketo landslides have been an important risk for the dam. If these landslides cause an artificial lake by blocking up the Euphrates River, the Karakaya hydroelectric power plant would be flooded (Erguvanli and Kumbasar, 1967). The Koçali complex is exposed along the deeply incised canyons of the Euphrates River and beneath the white Midyat limestone and red Gercüş conglomerate. There are several irregular Koçali complex exposures beneath the Midyat limestone at Tillo-Bego and Senketo landslides area. There are many contrasting rock types in Koçali complex such as limestone, radiolarian chert, basic volcanics, serpentine and marble. Gercüş formation is shown as a strip, cropping out from beneath the Midyat formation. It is mainly red to pink colour and its thickness fluctuates between 10 and 50 m. Gercüş formation is a conglomerate of limestone, serpentinite and radiolarian chert and a few gypsum lenses. The Midyat limestone blocks of various sizes, glide over the wet surfaces of the underlying Gercüş and Koçali wettable lithologies. This landslide, with an area of 45 km², the largest in Turkey.



Figure 21 Karakaya Dam.



Figure 22 A view of the Tillo-Bego-Senketo landslides.

Tortum Landslide

Could a landslide be useful? In north-eastern Turkey, along the Tortum Creek, there is an example of a useful landslide. The volcanogenic and carbonate-bearing flysch materials' landslide obstructed the Tortum Creek and made a 200 m high natural dam. Thanks to the existence of a natural spillway at the right slope Tortum waterfall which is 55 m high, this natural dam didn't fail by overtopping and it is being used by installation of a hydroelectric power plant. Fortunately, there is not any leakage from this natural dam.



Figure 23 Tortum Valley view from natural dam to the northern direction.



Figure 24 The land slid from the gray area in the back of the picture formed the natural dam. The waterfall is the Tortum Waterfall which appeared after the landslide.



Figure 25 Tortum Lake. The small cliff-like region at the back is the land displaced due to landslide.



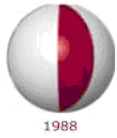
Figure 26 Natural Dam view from downstream side.

Conclusions

In Turkey, there is quite many landslides which destroy towns and villages causing substantial damages and deaths. Some typical examples were discussed above. These along with others in the world show that detail engineering geological studies are necessary before the projects of highways, railways, dams, tunnels, main buildings... etc.

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APPLICATION OF SHEET CRACK THEORY IN ANALYZING THE MECHANICS OF MOUZHUDONG LANDSLIDE

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Mouzhudong landslide is a momentous safety problem that disturbs the expressway from Chongqing to BeiHai. This landslide is bedding creep landslide. Landslide has occurred many times. This paper, according to energy dissipation mechanism, adopted mechanical calculation model of sheet slope crack, established mechanical criterion by which bending failure appeared the bedding landslide, and carried through idiographic analyses to this landslide. The analysis result indicate that Mouzhudong landslide is a typical failure of rock beam bend. The complex geologic condition and enough groundwater are major factors. The superficial rock weathering in slope results in strength abasement and rock appears creep are key factors that affect slope stability.

Key words: bedding landslide/creep collapse/mechanics analysis/sheet crack theory

Rockmass bedding landslide is one of the landslides which easily take place, and bedding creep landslide is most normal type. It normally collapse according to contact or between soft layer. The collapse types can be divided into three types, i.e. slope crumbles easily when it is high and steep (the inclined angle of slope and rockmass layer are big); Slope normally slide between rockmass layer when the inclined angle of rockmass layer smaller than slope inclined angle; Bedding creep landslide often occurs when rockmass slope inclined not bigger than inclined angle of rockmass layer^[1-6]. Mouzhudong landslides lies in the right side of Gui-Xin highway between K48+085~K48+210, the line trend is NE71.17°, the rockmass layer is coal silt rock with limestone., the layer shape changes greatly with full the groundwater. In 2000, the slope happened landslide due to the reason that initial reinforcement structure could not resist the landslide deformation, many cracks occurred in different trend, and the reinforcement wall convex. In 2001 the highway bureau took measure to strengthen the slope. At present, many cracks still occur along retaining wall. It is necessary to strengthen the reinforcement structure again. In this paper, Sheet Crack theory is applied in Analyzing the Mechanics of the Landslide to provide technical support for later landslide monitor and strengthening.

1 Mechanical model of sheet crack theory

1.1 Foundation of the mechanical model

Fig.1 is A sketch map of bend failure of anacinal slope, which inclined angle α , the slope length L. With external load and gravity, the super of slope take place bend collapse. It can be found that, whole rockmass can be classified in two types: AB and BC. AB has separated from the lower layer, convex to outside., and BC slides along lower rockmass layer. Apparently, BC will promote AB. Now a unit is selected as a sample for analysis in plane deformation state(fig.2). The lower rockmass layer is regarded as not changed, it can be thought on a rigid layer of Inclined angle α .



When the AB bends, the rotate angles of A and B are 0, so A can be regarded as fixed point, and B as movable rigid block, it can move but not rotate. The length of AB is l , the following formula can be gained.

$$x=0, y=0, y'=0 ; x=l, y=0, y'=0.$$

$$\text{It can be signed as: } y = \frac{f}{2} \left(1 - \cos \frac{2\pi x}{l} \right) \quad (1)$$

f is the deformation value in the mid point of AB.

When rock rockmass unit gravity γ , the gravity of a unit sheet is $p = \gamma h$. Two forces along x and y are p_x and p_y , signed as following :

$$p_x = p \sin \alpha \quad p_y = p \cos \alpha \quad (2)$$

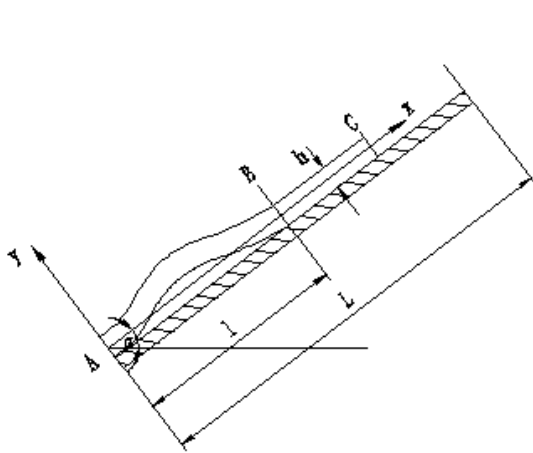


Fig.1 A sketch map of bend

failure of anaclinal slope

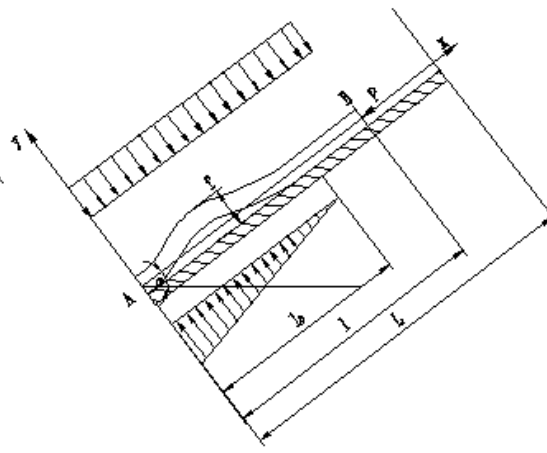


Fig.2 Mechanical model of bend

failure of top-layer rock

Movable line BC promote AB, the promote force signed as P, the friction angle between rockmass layers ϕ , cohesion force C, P can be calculated.

$$P = \frac{C \sin \alpha - \cos \alpha \gamma l}{\sin \alpha - \cos \alpha \tan \phi} \quad (3)$$

The forces on AB are complex, such as earthquake force, ground stress etc. Here only the water floating stress is considered. Its distribution rule is : $q = q_0 \left(1 - \frac{x}{l_0} \right)$, q_0 is silent water pressure of unit length in A, $q_0 = l \cdot \gamma_w \cdot H = l_0 \cos \alpha$, l_0 is unit length by water pressure..

1.2 Formula inferring

The energy method is here applied. In balance state, work by external force on differential part is equal to add amount of system elastic energy (i.e. the external does nit change by deformation, the potential energy is in two index of force).

$$dU = dT_1 + dT_2 + dT_3 \quad (4)$$

Here , dU is add amount of system elastic energy on differential part ; dT_1 is differential work of concentrated force ; dT_2 is differential work of axial force ; dT_3 is differential work lateral force. Here should pointed out, when sheet bends, the normal force between rockmass layer is very lower, so it is neglected.



1.2.1 Axial force

The sheet bends under force, its elastic potential; energy is : $U = \frac{EI}{2} \int_0^l y''^2 dx$, to the sheet model in fig.2, by formula(1), the integral calculus of y'' :

$$U = \frac{\pi^4 EI f^2}{l^3} \quad (5)$$

Here, E is elastic mode, $I = \frac{h^3}{12}$ inertia moment

The axial differential short valued Δ caused by sheet bend is :

$$d\Delta = ds - dx = \left(\sqrt{1 + y'^2} - 1 \right) dx \approx \frac{1}{2} y'^2 dx \quad (6)$$

$$\text{the work by axial concentrated force is : } T_1 = \int_0^l P d\Delta = \frac{\pi^2 P f^2}{4l} \quad (7)$$

$$\text{the work by axial body force: } T_1 = \int_0^l p_x y'^2 dx = \frac{1}{8} \pi^2 p_x f^2 \quad (8)$$

the added differential work value by the change of bend curve y are :

$$dU = \frac{2\pi^4 EI f}{l^3} df \quad dT_1 = \frac{\pi^2 P f}{2l} df \quad dT_2 = \frac{1}{4} p_x \pi^2 f df \quad (9)$$

Take the above three formula in formula (4), and regard $dT_3=0$, the following can be gained :

$$\left[\frac{4\pi^2 EI}{l^2} - \left(P + \frac{1}{2} p_x l \right) \right] \cdot f = 0 \quad (10)$$

If $P_k = \frac{4\pi^2 EI}{l^2}$ is the critical value of two fix points of sheet, $P' = P + \frac{1}{2} p_x l$ is axial force of sheet.

$$\text{The upper formula can be briefly signed : } (P_k - P') \cdot f = 0 \quad (11)$$

Although the sheet lies on rigid layer(fig.2), can not bend down, it can bend up without lateral force, f is not equal to 0, the upper formula can be signed as : $P_k - P' = 0$ (12)

From formula(12) the limit length of slope l_k can be calculated. When slope length l bigger than l_k , the slope will collapse.



1.2.2 Normal and lateral bend

The sheet is not only pressured by axial force ,but also lateral force p_y and floating q , T_3' and T_3^2 signed as the work of p_y and q ,so :

$$T_3' = \int p_y y dx = \frac{1}{2} p_y f \int (1 - \cos \frac{2\pi x}{l}) dx = \frac{1}{2} p_y l f$$

$$T_3^2 = \int q_y y dx = \frac{1}{4} q_0 f [l_0 + \frac{l^2}{2\pi^2 l_0} (\cos \frac{2\pi l_0}{l} - 1)]$$

It is noted, sheet can only bend up forward by lower rigid force ,the trend of displacement y and force P_y is always contrast, so T_3' is negative, T_3 is :

$$T_3 = T_3^2 - T_3' = \frac{1}{2} K l f \quad (13)$$

differential work dT_3 is : $dT_3 = \frac{1}{2} K l d f \quad (14)$ In the formula,

$$K = \frac{1}{2} a q_0 + \frac{q_0}{4\pi^2 a} (\cos 2a\pi - 1) - p_y \quad (15)$$

$a = l_0/l$,if $l_0 \geq l$,then $a = 1$, $k = \frac{1}{2} q_0 - p_y$. Combined (9) and (14) into(4),then :

$$(P_k - P') \int = \frac{K l^2}{\pi^2} \quad (16)$$

with formula (12)、(15) and (16) ,the surface bend collapse of bedding slope can be analyzed and determined^[7-12] .

1.3 Stability analysis

(1) when $K < 0$,it shows that the floating force is small, the main action is caused by lateral force p_y ,the sheet has change trend to sub forward. Due to rigid fixed condition, the displacement does not smaller than 0, $k l^2 / \pi^2$ is a negative constant , if formula(16) correct, then $(P_k - P')$ is to negative. This meaning is only $l \gg l_k$ and $P' \gg P_k$ correct, surface collapse will occur in bottom of slope, and cause to landslide. This phenomenon show in shadow zone III in fig.3.

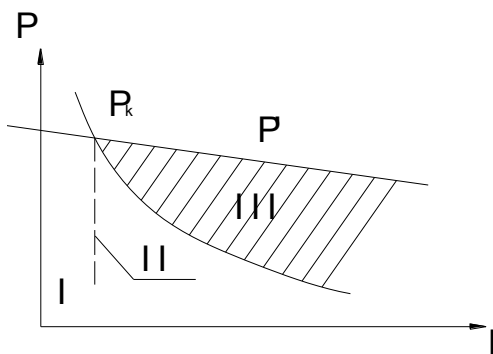


Fig.3 P_k and P'
Curves

(2) When $K=0$,it shows the action of lateral force is 0. with (12), the limit length l_k of slope can be inferred. When slope length L to or bigger than l_k ,the bedding slope will collapse. This phenomenon show in shadow zone II in fig.3.

(3) When $K > 0$, it shows that the floating force bigger than lateral force of gravity., shown in zone I in fig.3. So the bedding slope will not bend. The reason is the sheet has bended heavily, and rockmass has collapsed^[7-12].

2 Landslide mechanism analysis of Mouzhudong bedding slope



2.1 Summary of slope geology

The district lies in warm hot wet area, where the climate is warm, relative wet is 79% the year average temperature is 15°C, the highest is 35.5°C, the lowest is -8.7°C, the year average rain amount is 1109mm, the average wind speed is 8m/s. The earthquake tendency is VI. The height is 980~1180m, both side along the line are high mountains, the left is forest, the natural tendency is 25° or so, belongs to Qiannan Basin sink, and layers changes greatly, the inclined angle of rockmass layers lies in 28°~35°.

By geological survey and drilling hole, the rockmass layers are following:

- 1) Cohesion soil with broken block : Consisted of yellow-red cohesion soils or yellow cohesion soils with broken blocks. The blocks are and or limestone , from soft to close, and it is somewhat wet.
- 2) Second Changxing limestone (P2c) : Consisted of light gray to heavy gray limestone with silt blocks, the single limestone is 50~60cm, the silt block is strip or thin layer. With water ,the silt block will become silt, it exposures in left and right sides of the mountains along the line.
- 3) Second Longtan group(P2l): Consisted of coal layer, is dark gray-black coal silt rockmass, and stone and thin coal layer. With water, rockmass will become silt, sand stone exists inside the rockmass, and thin coal layer appears, the depth of the coal layer is 90~100cm it exposures in left and right sides near of the fault along the line.
- 4) Second Maokou limestone (P1m) : Consisted of light limestone, pure, thick, and near the surface the joint is mid-development, inside the joints filled with calcite, the rock core is short.

In Mouzhudong zone , the mount is deep, where the limestone is to 95%, there is much surface water and groundwater.



2.2 Calculation slope by collapse theory

The natural angle of slope is 25° or so, the length L of slope is about 250m, the average depth of surface rockmass is 1.5m, with many the layer joints inside the rockmass. The layer plane is coarse and close, the layer trend is similar to line trend. Because of the two thin layers of the surface rockmass, they are regarded as a single layer, the mechanical parameters are selected from two layers. From the geological survey datum: elastic mode is 10GPa, complex friction angle is 22° , according the groundwater, the residual shear strength is selected as shear strength of rockmass, rockmass density is $26\text{KN}/\text{m}^3$, inclined angle is 30° ^[13-14]. When $l_0 = 175\text{m}$, from the front formula, the following can be gained: $p = 39\text{KN}/\text{m}$, $p_x = 19.5\text{KN}/\text{m}$, $p_y = 33.8\text{KN}/\text{m}$, the whole length of slope is $L = 250\text{m}$, the inertia moment value is: $I = \frac{1}{12} \times 1.5^3 \text{m}^4$, elastic mode of rockmass is: $E = 10\text{GPa}$.

Calculation of promoting force of the lower part: $P = 5.85(L-l)\text{KN}$.

Axial force P' : $P' = P + \frac{1}{2} p_x l = 5.85(L-l) + 9.75l = 1.46 \times 10^3 + 3.90l$,

Critical force P_k : $P_k = 1.11 \times 10^8 / l^2$, $K = \frac{1}{2} a q_0 + \frac{q_0}{4\pi^2 a} (\cos 2a\pi - 1) - p_y$, to

formula $P_k - P' = \frac{Kl^2}{\pi^2}$, after calculation, the following can be obtained: $l_k = 226\text{m}$. With l_k do anti-calculation K , $K \approx 0$, it dedicated that with strong floating force, the action of lateral force is 0. From formula (12), the limit slope length can be gained to prove the property of upper inferring. From $P_k - P' = 0$, $l_k = 219\text{m}$. Compared the two calculation results, the limit lengths are almost the same. Here the conclusion can be got: With strong ground water pressure, the length of slope L is bigger than limit length l_k , Mouzhudong bedding slope will take place creep collapse. This tallies with the situ situation.

2.3 Mechanical analysis of landslide

From above calculation and analysis, the reasons why Mouzhudong Landslide took place are followings:

(1) Influence of groundwater. The main role of groundwater includes three parts: ①The groundwater affects the rockmass strength, when the rockmass lower the groundwater, its strength becomes lower; upper the groundwater, the rockmass strength is high. ②Mechanical action. In Mouzhudong landslide, there exist silent groundwater pressure and floating water pressure, and with groundwater, the penetration ratio of rockmass will change, so the groundwater plays important role on sheet bend. ③With groundwater, the crack inside rockmass will more seriously, the structure will break, the cohesion will leak, like a great sliding force acting the lower rockmass layer.



(2) Influence of weathered and creep character of rockmass. Due to time effect of creep, the cohesion of upper layer becomes smaller, the rockmass strength will become lower, the force on lower part will become bigger. The bend deformation will be greater. When the bend to somewhat content, the rockmass will be flexible and break, and causes the upper part of slope to slide^[15-16].

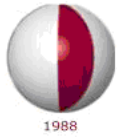
(3) Influence of geology. Here the slide site is inside coal layer with silt limestone, coal silt limestone, silt limestone and coal silt limestone become drained pipe of rockmass, it is very sensitive to penetration. There exist rich groundwater inside the coal layer, the silt rock will become silt, the mechanical property will descend. The more seriously situation is that the groundwater will not drainage easily, high water accumulates inside silt limestone and coal silt limestone, it acts great pressure to rockmass and cause to landslide. Otherwise, the hard of silt limestone and coal silt limestone is not same. Under ground pressure, the soft will be digested out, inside the hard block it will causes tension force. Due to the low tension strength value of rockmass, the vertical joints inside rockmass will open. With groundwater inside open joints, the surface slope will cause to break. To this perpetual slope with creep character, the collapse of surface part should not be neglected.

(4) In sheet crack mechanical model, the critical value to determine the slope is safe or not is critical height, which affected by inclined angle depth, and physical property of rockmass layer. To layer type rockmass, in a height, due to the premier bend, its occur and development is a creep period. After initial bend, the groundwater will penetrate inside rockmass and will soften the rockmass, will descend the rockmass strength. The phenomenon change in circle. The layer bend is controlled by tension strength and bend strength. If slope takes place break, the rockmass will slide abruptly, the rear part will bed-slide.

3 Conclusion

(1) The mechanism of Mouzhudong bedding landslide appears that, with slide force and normal force on rockmass layer, the sheet creep break will take place. The complex geology and rich groundwater are the primary affecting factors, the weathered and creep character are the secondary affecting factors, which deducing the slope to collapse faster.

(2) By geological and hydrogeological surveys, and on the base of sheet crack calculation model, the stability of Mouzhudong landslide is simulated. It shows that the calculation result is despond to situ situation, the landslide is typical sheet crack creep rockmass. The analysis results will provide useful technical clues to later monitor and reinforcement.



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PARTICIPATION AS AN ELEMENT OF SUSTAINABILITY IN POST-DISASTER SETTLEMENTS

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Participation is a key element in a sustainable social development. Participatory programmes are sustainable because they build on local capacity, the participants have ownership of them, and they are more likely to be compatible with long-term development plans.

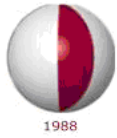
There are basically three levels and phases of community participation. These levels can be listed as community contribution, community organisation and community decision-making. Similarly, participation in the reconstruction of post-disaster settlements can be observed in decision-making phase, building phase and occupancy and evaluation phase.

The paper will first define the levels and phases of participation and emphasise the importance of participation in the reconstruction of the post-disaster settlements. For Turkey, it has been generally accepted that community interest and participation in disaster management have increased following 1999 Marmara Earthquake. The paper will compare the levels, the phases and the consequences of local participation in the reconstruction of settlements in Turkey following various earthquakes before and after this earthquake to find out if community participation for disaster management is sustainable.

1. Introduction

Sustainable development is an integration of environmental, economic and social development. Sustainability can be achieved both globally and locally. The ideal spatial level for local sustainable development is neighbourhood settlements. Social sustainability of a neighbourhood is obtained by forming a close community, balance and accessibility of all social classes and groups, and creating a safety environment. (Rublin and Falk 1999). Those goals for social sustainability can all be achieved by public participation of the community. According to Du Plessis and Holm (1999: 67), "Sustainability also calls for new decision making processes that include public participation, as well as effective co-operation of designers, technicians and manufacturers from the initial design stage."

Participation of the victims in reconstruction process, on the other hand, not only helps the achievement of sustainable environment but helps to rebuild communities, to rehabilitate the psychological condition of the survivors, and creates a feeling of ownership of the project by the local community (World Bank 1999: 155, HABITAT 2001: 29). Since the late 1970's, participation has become a key concept for the success of the projects in the fields of developmental studies and disaster management (Aysan *et al.* 1995: 26), yet the realisation of effective community participation in these programs is still being questioned after 30 years.



2. The Concept of Participation

Community participation in decision-making was actually observed in Ancient Athenians centuries ago, although it excluded slaves and women. After years of autocracy and feudal regimes, representative democracy provided the community to have a vote in decisions

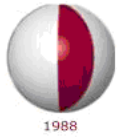
regarding themselves (Yigitcanlar 2001: 41-42). However, the concept of community participation derived its contemporary meaning in 1960-1970's with the rising of the New Left in the Western industrialised countries (Wolfe 2002: 121) and the democracy movements in Africa, Latin America and Eastern Europe in the late 1980's and 1990's (Wanmali 1998: 3).

There are many valuable definitions of participation which are accepted by various disciplines. A broad definition by Gotze (1997: 44) explains participation in its modern sense with the viewpoint of the community: 'Participation is a process in which individuals confront one another and adjust their wants and desires, thus creating a common ordering of individual needs and wants into a single vision of the future in which all can share and thus, sharing the shell of outlook and perception.'

2.1 Levels of Community Participation

There is not one standard model for defining the levels of community participation accepted which is interdisciplinary or even disciplinary. First and most acknowledged model belongs to Shelly Arnstein which was created in 1969. In this model, Arnstein introduced a ladder which had eight steps all belonging to different levels of participation. The ladder started with the step of *manipulation* when there are objectives of *educating and curing the community*, and went up to the step of *citizen control* when citizens handle the entire job of *programming, policymaking and managing* a project (Arnstein 1995: 360-361).

Following Arnstein, many models were introduced such as Rocha's Ladder of Empowerment (Yigitcanlar 2001: 51), Sanoff's (1992: 63) levels of participation in the design process, Twigg et al.'s (20001: 9-10) guided vs. people-centered categorisation of participation etc. This paper will use the levels of participation defined by Aysan *et al.* (1995) because the model specifically categorised the community participation in the reconstruction following disasters. In this categorisation, there are mainly three levels of community participation; participation as community contribution, community organisation and community decision-making (Aysan *et al.* 1995: 26-27). When communities participate only in the roles of contributors, they provide resources such as financial capital and material aid as well as labour but they have no actual influence over the planning and decision-making process (Aysan et al. 1995: 26). Participation as community organisation is also called representative participation by some scholars (Heller *et al.* 1998, Kelly and Becker 2001). The community is represented by a local committee, NGO or selected participants from the community for realising the actions regarding the organisational aspects of the process (Aysan et al. 1995: 27). In this level of participation, it is important that committees should represent the views of broad range of social, economic or cultural groups of the community (Kelly and Becker 2001: 112). The next level of participation is to include the community in the decision-making and planning. Community is responsible for decision-making at all stages of the projects.



Scientific and managerial personnel are indeed included but only with consolatory and regulatory roles in the project (Aysan *et al.* 1995: 27).

2.2 Phasing of Community Participation

The participation of the community can be observed in many phases of a project; the phasing may differ regarding the type of the project and the community involved. In general, the participation in the process for the establishment of settlements can be observed in three different phases; participation of the community in the decision-making and planning phase, in the building phase, and in the occupancy and the evaluation phase.

Participation in the decision-making phase is more meaningful and effective than the participation in the other phases of the project according to some scholars (O'Hara 1999, Kelly and Becker 2000) because decisions directly affect the practice (building phase) and the consequences (occupation phase) of the project. Additionally, the combination of expertise and community knowledge and values, before policies are determined, positively affects the success of the project. On the other hand, some problems may occur by having a direct participation from community in the earlier stages because thoughts and plans are mostly abstract and it usually is hard to bring any concrete solutions and plans by the community (Brody *et al.* 2003:50). Consequently, participation in that phase should be continuous and cover all the practices in that phase which are 'identifying problems (or issues), producing alternative solutions to the problem, choosing a specific solution, planning the implementation phase of the selected solution, and evaluating the results of the implementation' (Black and Gregersen 1997: 860).

Participation in the building phase is also termed as self-help housing. It has been the most common way to produce urban housing the low-income families in the developing countries and especially in South America since 1970's when the World Bank developed a policy to support self-build housing for the low-income community (Kowaltowski 1998). In this type of construction the main design criteria becomes simplicity and rapid construction. Builders disregard significant local factors of topography, wind and orientation because of the lack of knowledge. Therefore, the local community should have consultation or technical aid from the professionals about technical, social, economic, and aesthetic aspects of the settlement design (Kowaltowski 1998, Hall and Ward 1998). Participation in the occupancy and evaluation phase is the participation of the community in the matters which relate to daily management issues such as maintenance, improvement, demolition and the provision of the services in the housing settlements (Davies 1992: 20). To have a say in the activities in the occupancy phase helps to identify and fix the mistakes/complaints with the settlement as well as making the community feel more attached to the neighbourhood and more satisfied with the settlement (Rudlin and Falk 1999). Evaluation, on the other hand, also includes the actions that have been implemented on the previous stages in the foundation of the housing settlement. Therefore, aside from the benefits mentioned above, a detailed evaluation of the process helps to overcome the difficulties faced in the process and enables the planners to see the mistakes and not to repeat them (Aysan *et al.* 1995: 57, HABITAT 2001: 71-73).



3. The Significance of Community Participation in Post-Disaster Reconstruction

Integrating community participation into disaster studies has been a relatively new concept than other sociological and developmental studies (Twigg *et al.* 2001: 11); its importance has been recognised by the disaster managers on the last 20 years (Tierney *et al.* 2001: 17). This concept is termed community-based disaster management and Yusuf (2004: 1) defines it as 'where people (within the community) with common interest and concerns but with differentiated responsibilities act together in bringing their resources, capacity and commitment into play, to ensure disaster prevention and minimisation of losses and damages.'

3.1 Benefits of Community Participation in Post-Disaster Reconstruction

There are many benefits of community participation in the disaster management activities. They can be grouped in mainly three categories; benefits for the community, professionals and the actual programme itself.

Community participation helps to rebuild communities. Sense of belonging in the community and trust for the programme (Twigg 2001: 6); consequently their hope for a better future increases (Sorkin 2005) with the community participation. Additionally, participation of the survivors of the disaster enables them to express their actual needs and priorities (Twigg 2001: 6). Otherwise, without participation, communities become more and more dependent on external aid and their capacity for self-reliance decrease (Aysan *et al.* 1995: 27) and the value of what is given cannot be fully understood (Persaud 1991: 7-8, Ozden 2006: 7-8).

The use of local economic, social, political and labour resources helps the professionals to overcome the difficulties faced in the post-disaster phase (HABITAT 2001, Twigg *et al.* 2001). They have a chance to come to contact with the target group they are working for and that creates a greater understanding of their needs, priorities and vulnerabilities (HABITAT 2001: 29, Twigg *et al.* 2001: 6, Ozden 2006: 7), when there is effective participation of the community. Consequently, planning for future disasters becomes easier if participation is ongoing between the community and the professionals (Twigg *et al.* 2001: 6, Yakut 2004: 40). Furthermore, professionals can only be provided with the degree of their success of their previous activities by having close contact with the community (Pearce 2003: 216).

A programme is more likely to be effective if it is prepared and/or implemented with the participation of the local community (Aysan *et al.* 1995: 27, World Bank 1999: 144, Kelly and Becker 2000: 11). Not to be considerate of the local communities' needs is the primary cause to quite number of unsuccessful post-disaster reconstruction programmes implemented. (UNDRO 1982, HABITAT 2001). Additionally, participatory programmes are more socially sustainable therefore more cost-effective in the longer term (Twigg *et al.* 2001: 7, Arslan and Unlu 2006: 11).



3.2 Challenges Faced in Participation in the Post- Disaster Reconstruction

It is unrealistic to comment that community participation can be achieved easily once the concept is put in the reconstruction programme (Wanmali 1998: 7) because the concept of participation is complex and has no fix solution/ guideline that is entirely correct (Twigg *et al.* 2001: 5), and one solution that seems to be working for one community might likely be unsuccessful (Pearce 2003: 16).

The success of the programme relies on the manager's ability to understand with the psychological, political and social problems of the community and address clearly to the society about what is expected of them (Aydar 1980: 64). Professionals coming from various academic or organisational backgrounds, used to the command-control system, (Buckle 2001: 3) may not easily handle the complexity of participation (Drabek and McEntire 2003: 105).

The structure of the community also plays an important role in participatory programs. The community may refuse to participation because they may be dependent on the authorities (Heller *et al.* 1998: 152) feel that they will not be effective, have a low self-esteem and lack of confidence or simply they do not like the other people and organisations involved in the reconstruction and feel sceptic about the activities (Pascual 2001: 23). Furthermore, since there is no *all-embracing community*, it is likely that all groups in the community will not participate in equal shares (Aydar 1980: 39, Twigg *et al.* 2001: 7).

Another important challenge in the participatory post-disaster reconstruction is the urgency of the situation (Aysan *et al.* 1995, Baradan 2006: 5) and the element of time. Participatory programmes are likely to take more time than traditional programmes (Aydar 1980: 69). Consequently, main policies for reconstruction should be decided before the disaster happens (Baradan 2006: 3) above all if it is a participatory programme.

4. Evaluation of Community Participation for the Post-Disaster Settlements in Turkey

Tercan (2001: 40) states that there are about 54 000 NGO's in Turkey, and 1200 of them are involved in disaster management activities and he claims that most of them were formed following the Marmara Earthquake. The belief that community participation in disaster management activities was increased after the earthquake is well-founded (Arslan 2006, Ozden 2006). This section will compare the degree of community participation before and after the Marmara Earthquake to test the validity of the belief for the post-disaster housing reconstruction process.



The Community Participation in Turkey

Community participation has not been a popular concept for the Turkish Community throughout the years. There has been a significantly hierarchic relationship between the central state and the community especially in the times of the Ottoman Empire and in the foundation years of the new Turkish Republic (Heper 1998: 43-46, Ozerdem and Jacoby 2006: 2). Even after the Second World War, when it was a more democratic platform with multi-parties in the parliament, the centralistic view was not changed and some of the important economic activities were decided without consulting the community representatives (Heper 1998: 44). Furthermore, until the middle of 1980's the act of *being organised* was considered only as being political within the state (Tarih Vakfi 2001: 328-331) and mostly being against the state's politics (Heper 1998: 44). Therefore, it was not a suitable environment for active community organisations.

Although organisations were not proved to be popular within the community, since 1017 generally unorganised traditional, regional and kinship networks and migrant connections played and still plays an important role for 'acting together' for the sake of the disadvantaged (Tarih Vakfi 2001: 65, Ozerdem and Jacoby 2006: 56).

With the acceptance of the liberal market economy in the middle of 1980's, gaps were beginning to form in the economical situations of the citizens causing low morale and poverty (Ozerdem and Jacoby 2006: 53). This raised a general complaint in the community and the interest in the community organisations was raised, especially in the 1990's with the Susurluk Incident (Tarih Vakfi 2001: 289). The interest in the community based organisations, however, was its peak immediately after the Marmara Earthquake (Tarih Vakfi 2001: 279, Tercan 2001: 42). The successful implementations of the rescue teams, aid organisations, rehabilitative and the educational organisations in the response phase relocated the community hope and sympathy from the central state to NGO's (Silay 1999: 9, Ozerdem and Jacoby 2006: 62). Furthermore, direct community participation was also increased within the community. For the first time, people did not only complain but actually decided to do something about improving their situation (Tarih Vakfi 2001: 355). Ozerdem and Jacoby claims that (2006: 60) 'A new desire to engage in earthquake response and mitigation emerged through the country.'

Currently, with the aim of gaining a full European Union Membership, Turkey has implemented a number of public sector reforms (Ozerdem and Jacoby 2006: 67). Those reforms have implications for civil organisations as well as the increase in community participation (Ozerdem and Jacoby 2006: 67-68).



Community Participation in the Process of Post-Disaster Reconstruction in Turkey

Turkey has experienced many destructive earthquakes and post-disaster reconstruction projects throughout history. 500 000 dwelling units were destroyed in 140 damageable earthquakes in the years 1903-1998 (Ergunay 1999: 1). According to Gilbert (2001: 1), Turkey ranked 12th in the world in disaster homelessness between 1980 and 2000. Therefore, post-disaster settlements have always been in the agenda for the Turkish authorities.

As mentioned before, community participation is a key factor for socially sustainable settlements (Du Plessis and Holm 1999: 67). It is therefore important to seek for the level and the phasing of the community participation in the reconstruction process of settlements for sustainability. Furthermore, a consistency is required to achieve a *socially sustainable reconstruction policy* (Pearce 2003). It has been previously mentioned that community participation has been increased following the Marmara Earthquake. Comparison between the levels and phasing of participation 1983 Erzurum Earthquake (before), Marmara Earthquake (during), and 2000 Cankiri (just after) is given below to test the consistency of the community interest in disaster management activities.

4.2.1 1983 Erzurum Earthquake

Erzurum experienced a damageable earthquake in 30th October 1983 which caused 35000 people to be homeless immediately after the earthquake. After the earthquake, 3244 permanent dwellings were built (Karaesmen 2002: 421). The levels of participation in the reconstruction process following the Erzurum Earthquake was participation by community organisation and by decision-making because the local community had very little resources left to contribute (Aysan 1984, Aysan 1985).

The community participation in the decision-making phase following the earthquake seemed satisfactory (Aysan 1984, Aysan 1985). Their opinion about their preferences for temporary settlements (Aysan 1984: 23) and location of the reconstruction (Aysan 1984: 32) was asked the central state. On the other hand, decisive making participation in the reconstruction of permanent dwellings was not as high as the former decisions. Therefore, although local needs were said to be examined by the central planners (Aysan 1985: 31, Tapan 1986:4), the dwellings had technical problems due to the wrong positioning of the animal sheds (Tapan 1986: 4).

In the building phase, some residents used material aid (cement and concrete) from the state to strengthen their houses but the lack of technical control and assistance from the practitioners was observed in this process, especially in the rural areas (Aysan 1984: 29). The remaining permanent dwellings were built by the state and their plots were suitable for future extensions and self-building (Aysan 1985: 31). The evaluations of the process were done by the central and local governments.



4.2.2 1999 Marmara Earthquake

In August 17th 1999, the Eastern Marmara Region and especially Kocaeli and Sakarya experienced a devastating earthquake. Immediately after the earthquake 600 000 people were left homeless and a reconstruction process for a total number of 44 107 houses were implemented following this and the following 1999 Bolu Earthquake (TC Basbakanlik Kriz Yonetim Merkezi 2000). As mentioned before participation from the community, and the interest and sympathy for community-based organisations reached its peak following the earthquakes. Consequently, all three levels of community participation were observed in the reconstruction process (Silay 1999, Tarih Vakfi 2001, Ozerdem and Jacoby 2006).

In the decision-making phase, like in the Erzurum Earthquake, the community's preferences for temporary settlements were asked (DIE 1999). Additionally, in the damage assessment process, the community were informed and their objections were mostly accepted in re-assessment of the damaged buildings (Sayistay 2003: 25). Although, community based organisations worked intensely in rescue, relief, psychological aid, and education in this phase (Tarih Vakfi 2001); these organisations (Ozerdem and Jacoby 2006: 112), community leaders (Arslan and Unlu 2006: 5) or the local institutions (Afete Karsi Sivil Koordinasyon 2003: 65) were not included in the planning process of the reconstruction following the Marmara Earthquake. This resulted socially unacceptable dwellings which were far away from the city centre, had no planning of social services (just plots) and had transport problems (Arslan and Unlu 2006: 7-8, Ozden 2006: 5)

In the building phase of the emergency shelters, improvised shelters by the community were built and some survivors stayed longer than expected in these shelters (Ozcan 2000). In building of the temporary settlements, many organisations, volunteer groups and NGO's took part by either financing or by being involved in the process (Tarih Vakfi, 2001, Ozerdem and Jacoby 2006). Even though the community did not use self-built methods for the initial construction, they used this method for modifications in their temporary settlements. Although this method damaged the reusability of the shelters, it was permitted by the state because the residents stayed in the temporary settlements longer than it was planned initially (Baradan 2002: 91-92). In the construction phase of the permanent dwellings, financial aid for self-help building was given to the 12465 house owners. There were some settlements built by the community organisations especially in Bolu Region (Arslan and Unlu 2006: 10) but the construction of the majority of the permanent settlements were realised by the state. Like the previous earthquakes, the evaluation of the reconstruction process was implemented by the state, local and academic institutions.



4.2.3 2000 Cankiri Earthquake

In June 6th 2000, an earthquake measuring 5.9 damaged the Cankiri rural region. Following the earthquake a total number of 1221 post-disaster dwellings were built (Dikmen 2005: 70). The national public interest in Cankiri faded away quickly but local community participated partly in the post-disaster housing reconstruction process. Their levels of participation were observed as contributors and decision makers (Dikmen 2005).

In the decision-making phase, the residents had the option of choosing from three designs (Dikmen 2005: 71). Although this seems like a highly participatory process, the villagers did not have a chance to discuss the designs with the architect face to face; instead they contacted representatives from the state and the representatives contacted the architects (Dikmen 2005: 76-77). Consequently, about half of the dwellings were unoccupied or seasonally occupied by the residents (Dikmen 2005: 70-77) because they were not satisfied with the planning, location, orientation, heating, plot size and /or humidity (Dikmen 2005: 91). The residents also had the option of get their houses designed but their designs had to be controlled and approved from the state authorities (Dikmen 2005: 71). These residents hired the architects and contractors themselves with partial loan from the state so they had to contribute their own financial resources (Dikmen 2005: 72).

In the building process, local labour was partially used (Dikmen 2005: 75), and like the previous rural permanent dwellings, the houses in Cankiri was also modified (Dikmen 2005: 79-90) to adapt their houses to their way of living. As mentioned before, self-building was permitted but this time better control mechanisms were implemented. The satisfaction with those dwellings is much higher than the dwellings built by the state (Dikmen 2005: 90). The evaluation of the dwellings are realised by the state and academicians like the previous times, but high non-occupancy and modification level by the residents shows a clear idea.

5. Conclusion

Turkey is a country that is vulnerable to earthquakes and the ratio of homelessness after major earthquakes is much higher than many other countries. Therefore, the sustainability of post-disaster settlements is significant for the community. In order for them to be socially sustainable, the process of the reconstruction of the settlements should enable community participation. Furthermore, community participation is significantly important for the success of the disaster management activities despite its challenges for the implementation. These challenges are likely to be overcome by pre-disaster planning of a socially sustainable post-disaster settlement policy that is also sustainable.

Community participation had not been a popular concept for the Turkish community for years; this concept and community organisations gained most of their popularity in Turkey, actually after a disaster, 1999 Marmara Earthquake. To achieve the goal of sustainable post-disaster settlement policy, this popularity should influence the implementations, and this influence should be consistent for future earthquakes.



The study aimed, by comparing the levels and phasing of the community participation in disaster reconstruction process following 1983 Erzurum Earthquake, 1999 Marmara Earthquake and 2000 Cankiri Earthquake, to find out if the popularity following the earthquake had actually influenced implementations during and after the peak of the recognition. Findings are summarised in the Table 1.

Table 1. Comparison of Community Participation in Reconstruction Implementations

EARTHQUAKE	LEVELS OF PARTICIPATION			PHASING OF PARTICIPATION		
	Contribution	Organisation	Decision-Makers	Decision-Making	Building	Evaluation
1983 Erzurum	Very little resources - no contribution	Some local committees	Temp. dwelling and location preferences	Surveys about temp. dwelling and location preferences	Self-built houses Changes in perm. dwellings	Community not included
1999 Marmara	Wide contribution nationwide	NGOs and CBOs in response, very few in reconstruction	Temp. dwelling preferences	Temp. dwelling preferences and acceptance of the objections in assessment	Self built houses Changes in temp. dwellings	Community not included
2000 Cankiri	Financial contribution for self-built houses	Almost none	Choosing the house plans from three alternatives	Choosing the house plans from three alternatives	Self-built houses Changes in perm. dwellings	Community not included

The study showed that the popularity has not very much influenced the implementations even following the Marmara Earthquake. Differing from the other implementations, another level of participation which is organised participation was observed in the reconstruction due to the popularity of the community based organisations in that time. Furthermore, aside from the financial and material aid for self-help housing, the residents did not have a chance to modify their dwellings in the building phase because of the inflexibility of the urban fabric differing from the other implementations.



Even one year after the earthquake, the levels and phasing of the community participation in the process of reconstruction almost returned to pre-1999 condition following the 2000 Cankiri Earthquake. The choice from three design alternatives was a good-intended implementation but due to the problems in the organisation of the communication, the result was a failure causing low occupancy. Additionally, no step was taken to include the community in the evaluation process. On the other hand, the improvement for the control mechanism for self-built housing could be stated as positive step towards sustainable post disaster settlement policy.

The popularity of the community based organisations following the 1999 Marmara Earthquake did indeed influence the disaster management activities related to response and mitigation. Although the control mechanism for self-help housing was improved following the Marmara Earthquake, it would not be underestimation to state that this popularity did not influence the community participation in the reconstruction process in a significant way. Consequently, Turkey does not yet have a socially sustainable post-disaster settlement policy. The ways of implementing such a policy should be evaluated, without neglecting its challenges, before another destructive disaster such as the Marmara Earthquake happens to achieve this goal.

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SPATIAL ANALYSIS OF EARTHQUAKE EPICENTERS IN; NORTH-WEST OF ANKARA

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Earthquakes are naturally occurring hazards, which result from unexpected movement of a part of the Earth's surface and the movement of faults, planar zones of deformation within the Earth's upper crust. The purposes of this study are to define the relationships between earthquake epicenters and faults; and to predict probable fault segments in the Northwest of the Ankara province in which earthquakes can occur.

This study is carried out in two stages. In the first stage spatial distribution of earthquake epicenters that belong to the last decade is analysed in local and global scale. In the local scale analyses the short distance interaction between earthquake epicenters are explored, while in global scale analyses, the large scale variation in the epicenters are investigated. The local scale analyses involve nearest neighbor distances and the K function. Global scale analyses are performed by using Kernel estimations and quadrat methods. In the second stage, relationships between the earthquake epicenters and faults of the study region is analyzed by using GIS techniques to predict probable fault segments in which earthquakes can occur.

Keywords: *Earthquake, Active faults, Point Pattern analysis, GIS.*

Introduction

Earthquakes usually triggered by the release of underground stress along fault lines. Determination of active fault segments is important for seismic hazard analysis. In this study a methodology is proposed for predicting active fault segments by analyzing point pattern of earthquake epicenters and relating the pattern with existing faults based on geographic Information systems (GIS).

Point pattern analysis is concerned with the location of events (epicenters in this case), and with answering questions about the distribution of those locations, specifically whether they are clustered, randomly or regularly distributed. (Bailey and Gatrell, 1995, Cressie, 1993). The point pattern analysis is performed by using visualization, exploration and modeling stages.



Visualization is the preliminary stage in any point pattern analyses. As it may give misleading idea about the pattern, exploration and modeling are necessary to obtain good descriptions of observed pattern. Exploration is an intermediate stage to further understand the visualized pattern and to develop appropriate hypotheses about the pattern. The term modeling refers to statistically comparing various summary measures computed from the observed distribution of events (epicenters), through hypothesis testing. The common baseline hypothesis is “complete spatial randomness (CSR)”. CSR is a reference hypothesis against which to assess whether observed pattern is regular/clustered or random. CSR is a standard model and states that the events follow a homogeneous Poisson Process over the study region.

The proposed methodology has two phases, where the first phase (Phase I) is the point pattern analysis based on visualization, exploration and modeling and the second phase (Phase II) is predicting active segments of the faults by relating the point pattern analyses of earthquake epicenters with existing faults through GIS. In the Phase I, spatial distribution of earthquake epicenters that belong to years from 1986 to 2004 is analysed in local and global scale. Global scale properties are described in terms of the intensity, $\lambda(s)$, of the process, which is the mean number of events per unit area (Eq. 1)

$$\lambda(s) = \lim_{ds \rightarrow 0} \left\{ \frac{E(Y(ds))}{ds} \right\} \quad (1)$$

where $Y(ds)$ refers to the number of events in an infinite decimal small region and ds is the area of the small region. Global scale analyses are performed by using Kernel estimations and quadrat methods.

The local scale properties, or spatial dependence, of a spatial point process involve the relationship between numbers of events in pairs of sub regions within R . This is called the second-order intensity of the process (Eq. 2).

$$\gamma(i, sj) = \lim_{dsi, dsj \rightarrow 0} \left\{ \frac{E(Y(dsi)Y(dsj))}{dsi dsj} \right\} \quad (2)$$

The local scale analyses involve nearest neighbor distances and the K function methods. Local and Global scale analyses can shed light into spatial distribution of epicenters where in the second stage they are correlated with fault segments. Relation between the earthquake epicenters and faults of the study region is analyzed by using clustering and GIS analyses techniques to define probable active fault segments of the region and to predict probable areas in which earthquakes can occur.



2. Study Area

Study area is located to the northwest of Ankara province (Figure 1). The area is within Zone 36 of Universal Transverse Mercator projection system. The upper left and lower right coordinates of the study area are 4529790N-357703E and 4426164N-471475E, respectively. The total area covered is 11786 km². Major cities within the area are Bolu, Gerde, Çamlıdere, Kızılcahamam, Beypazarı, Seben and Gündül. Morphologically the area is mountainous and characterized by North Anatolian Fault Zone (NAFZ). Most of the historical earthquakes are significantly located around the NAFZ.



Figure 1. Location map of the study area

3. Point Pattern Analysis of Epicenters (Phase I)

Point pattern analysis of earthquake epicenters are performed in three phases: visualization, exploration for designing appropriate hypothesis and modeling for testing hypothesis.

3.1. Visualization of the Point Pattern

It is the first stage in any data analysis. The most common methods in visualization is constructing a dot map based on the coordinates of the epicenters. The purpose of visualization techniques is to obtain an initial impression about the pattern and to generate appropriate hypotheses.

Figure 2 shows the location of 278 number of earthquake epicenters which occurred in years 1986 to 2004 in the North-west of the Ankara volcanic province. From the visual analysis of the spatial distribution of epicenters we can observe that group of events seems clustered around north-west part of the study area.

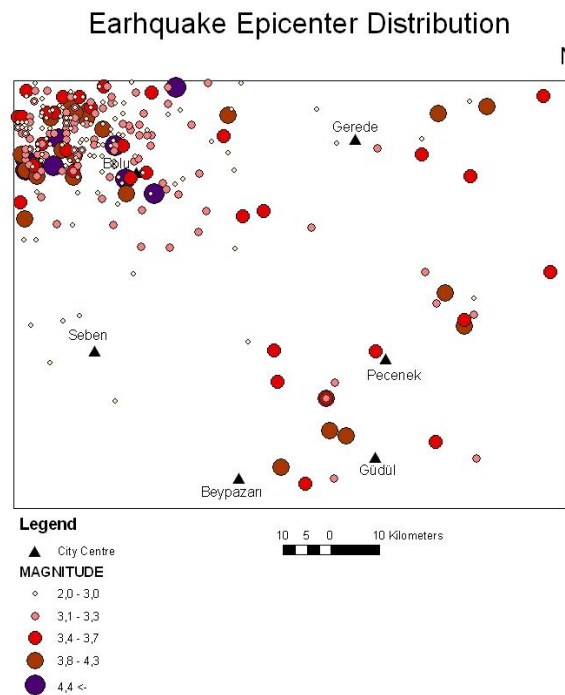


Figure 2. Visualization of the epicenters

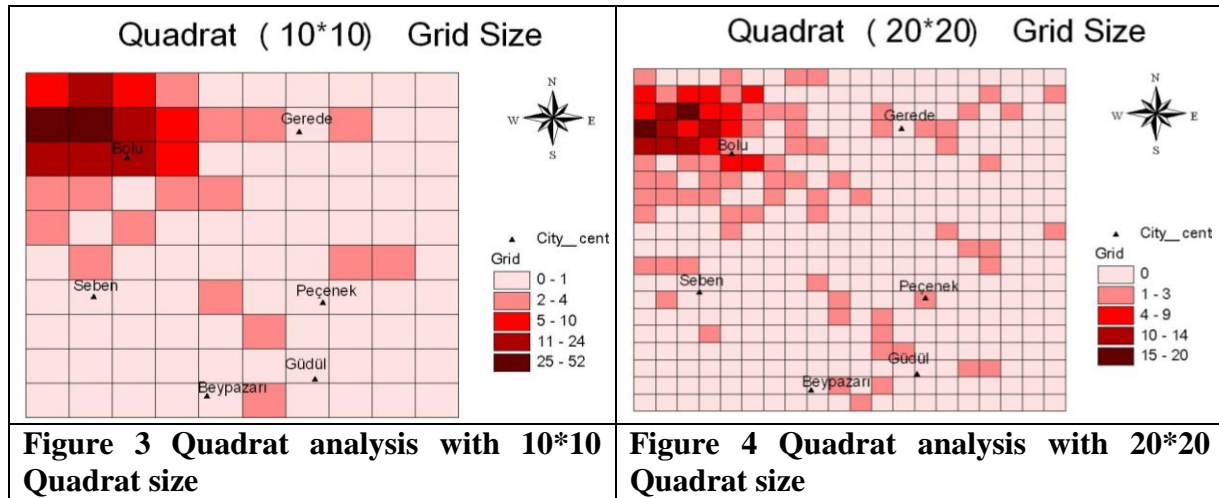
3.2. Exploration of Point Pattern

Exploration of earthquake epicenter involves manipulating data with small modifications for better revival of the observed pattern. Exploration is performed in two stages. In the first stage global distribution is explored by using quadrat and kernel methods. In second stage small scale interaction between the points are explored by nearest neighbor and the K function techniques.

3.2.1. Quadrat Methods

In quadrat analysis the study area is overlaid by grids of equal size, and the number of points in each cell is counted (Shaw and Wheeler, 1985). This leads to assign a global idea by visualizing the sub-regions with high or low intensity. The selected quadrat size can greatly affects the result of the analysis. Large quadrants produce a crude description of the pattern, while too small ones may contain only one event or they might not contain any events at all. Although this analysis gives a global idea of sub-regions with high or low intensity, much of the spatial detail in the point pattern may not be taken into account by considering the relative location of events.

In this study two quadrat sizes (10*10 and 20*20) are used for the analysis operation. Figure 3-4 show maps generated with quadrat method. As quadrats are made smaller to retain more spatial information, variability in quadrat counts becomes very high, making meaningful interpretation impossible. In general view, there are high intensity zones around Bolu, Gerde, North of Seben, North-West of Gündül, East of Beypazarı region.



3.2.2. Kernel Estimation

Kernel density estimators belong to a group of estimators called non-parametric density estimators (Bailey and Gatrell, 1995). It has no fixed structure and depends upon all the data points to reach an estimate. Changing the bandwidth allows to look at the variation in intensity at different scales. Selection of the kernel size affects the visual interpretation of the distribution of the epicenters in the study region. The higher value 'smoothes' the distribution rather too much on the other hand the lower value gives spiky impression of the epicenter distributions.

The kernel estimation is applied for earthquake epicenters and their magnitudes. In this study the search radius are selected as 5, 10 and 15 km.; the result of generated maps are shown in figure 5 A_B_C and 6 A_B_C for epicenter locations and magnitudes. The visual interpretation of the generated there different point density maps and earthquake magnitude density maps show that 10 km. search radius is more appropriate for exploring the density. There are basically high intensity hot spots for earthquake epicenters, which are located on the northwest part of the region (around Bolu) and elongated along the north-east to south-west (along the line formed by connecting Beypazari and Pecenek regions).

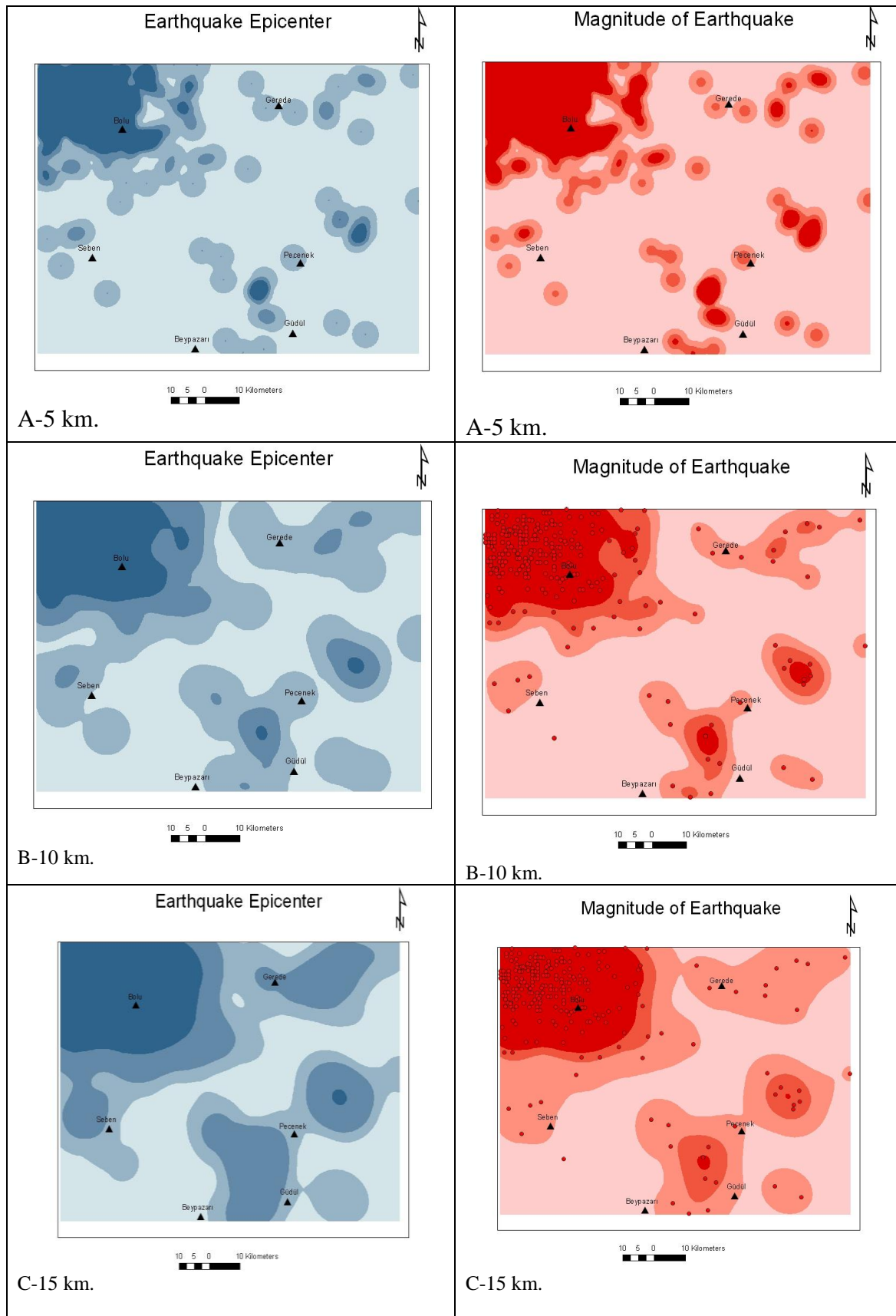


Figure 5. Kernel estimations of earthquake epicenters **Figure 6. Kernel estimations of earthquake magnitude**



3.2.3. Nearest Neighbor Distance

This method focuses on short-range interactions between points (Reed and Howard, 1997). It is designed for investigating the second order properties of the spatial point process and focuses on the relationship between inter-event distances. In this study, firstly pattern is explored by estimating the empirical cumulative probability distribution function of $G(w)$ for nearest event to event distance (W)

$$\hat{G}(w) = \frac{\#(w_i \leq w)}{n}$$

n = Total number of events in R

The result of plotting $G(w)$ against W is examined to see the evidence of inter-event interaction (figure 7). The result shows that the distribution function $G(w)$ climbs very steeply at a distance between 1 and 4 km. before flattening out, then the indication would be the observed probability of short as opposed to long nearest neighbor distances, which suggest clustering. This confirms the earlier visual impression that obtained from simply plotting the locations of the events. It is also inferred from Figure 7 that the earthquake epicenters are correlated to each other for a distance of 1 – 4 km.

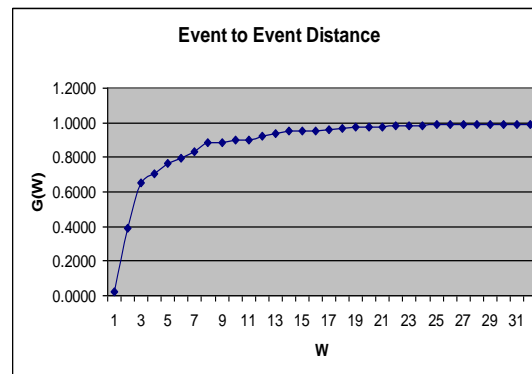


Figure 5. Event to Event Nearest Neighbor distribution function for Earthquake Epicenters

3.2.4. The K Function

The nearest neighbor distance method uses only the distances to the closest events and therefore considers the smallest scales of pattern. Information on larger scales of pattern is ignored. An alternative approach is to use an estimate of the reduced second moment measure or the K function of the observed process, which provides a more effective summary of spatial dependence over a wider range of scales. The advantage of the K-function analysis is that it uses all point-point distances, not just the nearest neighbor distances, to show spatial clustering at various scales of pattern, and the distance where clustering or over-dispersal becomes significant (Bailey and Gatrell 1995). The K function considers all combinations of pairs of points and compares the number of observed pairs with the expectation at all distances based on a random spatial distribution of points

If we allow the distance or scale, h , to vary then expression is seen to define a function of h , designated as the K-function. Figure 8 shows the L function, which is normalized form of the K function, for the earthquake epicenters, which have peaks at distances of 1.5 km and 3.5 km, indicating clusters at these distances.

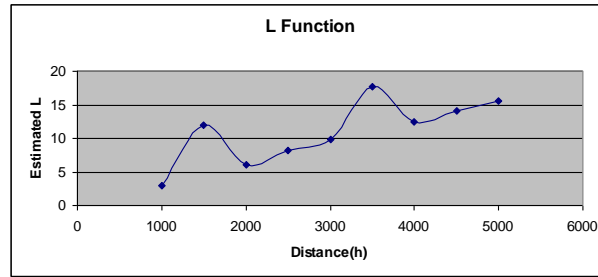
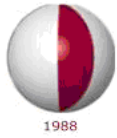


Figure 6. Result of the K function

3.3. Modeling of Point Pattern

Modeling of earthquake epicenters is performed to explain observed pattern by designing and testing hypotheses. The point pattern is modeled by testing against a baseline hypothesis, which state that is the observed pattern is due to “complete spatial randomness (CSR)”. Under CSR, events are independent and the number of events in any specified area of fixed size is Poisson distributed (Gatrell at. al., 1996). Commonly used methods for testing CSR include Quadrat, Nearest-Neighbor and K Function test. Hence, the hypothesis of complete spatial randomness (CSR) for a spatial-point pattern which is defined by “*H0: Distribution of the earthquake epicenters are random*”, is tested for these methods.

3.3.1. Simple Quadrat Tests for CSR

The quadrat counts can be tested for CSR by using the so called index of dispersion test. A simple test statistics for randomness can be based on the idea that these counts follow a Poisson distribution. The test statistic for “I” is defined as (Eq. 3):

$$I = \frac{(n-1)s^2}{\bar{x}} = \frac{\sum_{i=1}^m (x_i - \bar{x})^2}{\bar{x}} \quad (3)$$

Where \bar{x} , s^2 , m indicates mean observed counts, observed variance of the counts and number of grids respectively. $\frac{s^2}{\bar{x}}$ is often called the index of dispersion and $\frac{s^2}{\bar{x}} - 1$ often called the Index of Cluster Size (ICS). If ICS is greater than zero, the data set has one or more groups of points in clusters and large areas of maps without points. If ICS is less than zero the pattern is regularly dispersed implying that the events are distributed more or less regularly over the region

Result of the 10 and 20 quadrat counts is tested for CSR by using the index of dispersion test Table 1. The outcome of “I” is compared with χ^2_{m-1} under 0,05 significance level according to result large values indicate clustering distributions also the result of the Index of Cluster Size (ICS) greater than zero verifies this finding

Table 1. Result of the simple quadrat tests for CSR

Quadrat Size	I	ICS
10*10	778,73	0,229
20*20	4218,58	9.5729



3.3.2. Nearest Neighbor Tests for CSR

Nearest neighbor analysis examines the distances between each point and the closest point to it, and then compares these to expected values for a random sample of points from a CSR pattern. In order to identify departures from CSR based on summary statistics of m randomly sampled nearest neighbor event (epicenter)–event (epicenter) distances (w_1, \dots, w_m), or point (any point in the region)-event (epicenter) distances (x_1, \dots, x_m), the Clark-Evans and Hopkins tests are used to test to define the distribution of point pattern whether regular or clustered.

The Clark-Evans test based on the average distance from each object to its nearest neighbor has been popular, but it ignores edge effects and dependence between distances (Clark and Evans 1954). It compares $W = \sum W_i / m$ with percentage points of the distribution $N\left[\sqrt{2\sqrt{\lambda}}, 1 - \pi/4\lambda\right]$ (Bailey and Gatrell 1995).

The test is based on event-event distances and hence requires a completely enumerated point pattern to be available, from which events can be randomly sampled and their nearest neighbor distances determined. This is reinforced by the fact that λ is unknown and needs to be replaced by an appropriate estimate, the obvious one being $\bar{\lambda} = n/R$, where n is the number of events in study region. In such a case, it would then seem desirable to use all n event-event distances if possible, rather than a random sample of m of them. An approximate correction to $E(\bar{W})$ and $VAR(\bar{W})$ has been suggested which allows all nearest neighbor distances to be used ($m=n$), as opposed to sample (Eqs. 4-5)

$$E(\bar{W}) = 0.5\sqrt{\frac{R}{n}} + 0.051\frac{P}{n} + 0.041\frac{P}{n^{3/2}} \quad (4)$$

$$VAR(\bar{W}) = 0.070\frac{R}{n^2} + 0.037P\sqrt{\frac{R}{n^5}} \quad (5)$$

Where P is the perimeter of the study region, which has area of R . The result of the Clark-Evans test indicates that under 95% confidence interval distribution of the epicenters shows clustered pattern.

The Hopkins test compares $\sum x_i^2 / \sum w_i^2$ with percentage points of the distribution with $F_{2m, 2m}$ (Bailey and Gatrell 1995). The main idea of this test is that if the point pattern is clustered the point event distance x_i is larger than event-event distance w_i . When the Hopkins test is applied to the epicenters the result of $\sum x_i^2 / \sum w_i^2 = 1.47$ is compared with $F_{2m, 2m}$. According to result, distribution of the epicenters also indicates clustered pattern.



3.3.3. The K Function Tests for CSR

For modeling of the K function, the expected value of L (d) function, which is d under CSR, is used. The confidence interval in this analysis is generated by examining the specified number of permutations of randomly generated patterns of N points over the whole study area. If for any distance, the observed L(d) falls above or below the expected L(d) the null hypothesis of CSR can be rejected at an appropriate level of significance (Bailey and Gatrell 1995). 100 Monte Carlo simulations were performed to evaluate an approximate confidence interval around the L statistic. Values of L that are greater than any particular percentile indicate clustered distribution while values of L less than any particular percentile indicate more dispersion. L is calculated for each of 100 distance intervals (bins.) Eight percentiles are identified for these statistics.

A graph of the L-function result is shown in Figure 9. This indicates that we can reject the null hypothesis of CSR. Also, since the observed L(d) is higher than the Minimum L(d), this implies the epicenters shows clustered pattern.

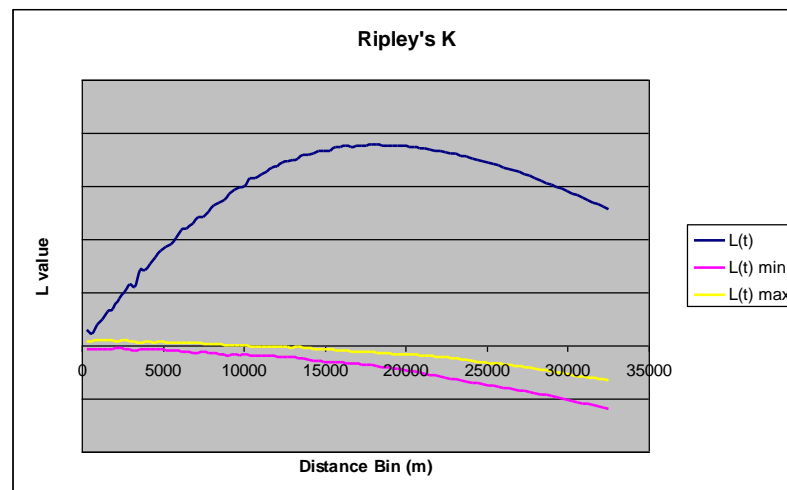


Figure 7. Graph of the K function

4. Determination of Probable Active Fault Zones (Phase II)

This phase involves relating the earthquake epicenter clusters to the existing faults so that active fault segments can be predicted. In the previous phase (Phase I) it is found that the earthquake epicenters follow a clustered pattern. However, the locations of clusters have not been identified. Hence Phase II starts with identifying the epicenter clusters based on cluster analysis.

Cluster analysis mainly concerns with grouping objects of similar kind into respective categories. Objects in a cluster are similar to each other. They are also dissimilar to objects outside the cluster, particularly objects in other clusters. Different algorithms are used for cluster analysis (e.g. K Means, Fuzzy C Means, Minimum Distribution Angles and Self Organizing Maps).



The K-means clustering classifies a given data set in a certain number of clusters. It is one of the simplest unsupervised learning algorithms that solve the well known clustering problem (MacQueen, 1967). This algorithm analyzes input data to determine a particular number of class centre. Cells are assigned to classes by determining the closest class center. After each classification iteration, the process calculates a new center for each class by finding the point which minimizes the sum of the squared distance from each point in the class to the class center. The process repeats until the shift in class centers falls below a specified value, or a specified maximum number of iterations is reached. (Microimages Online Reference Manual, 2002)

The Fuzzy C Means generates clusters based on fuzzy logic concepts that involve minimization of some objective function, or error criterion, belongs to a family of objective function clustering algorithms (Bezdek, 1981). Usually, membership functions are defined based on a distance function, such that membership degrees express proximities of entities to cluster centers. By choosing a suitable distance function different cluster shapes can be

identified. This methods gives the opportunity to deal with data that belong to more than one cluster at the same time.

The Minimum Distribution Angle method is an unsupervised classification method. This method uses an iterative approach to compute classes. The Minimum Distribution Angle algorithm uses the set of values for each input cell to define a vector in feature space. The process analyzes the sample dataset to determine class centers, using varying angles between sample vectors (distribution angles) as a measure of relatedness. Sample vectors separated by small distribution angles are assumed to be more closely related than those with larger distribution angles (Microimages Online Reference Manual, 2002).

The Adaptive Resonance method generates clusters based on neural network approach. It is designed to recognize natural groups of spectral patterns in the input data, and to produce the same neural net output (class identification) in response to input of similar patterns (Microimages Online Reference Manual, 2002).

The four different cluster algorithms are applied to earthquake epicenters as can be seen from Figure 10, most of the clusters are located Northwest part of the study area. K means algorithm generates similar Clusters to Fuzzy C means. However, K-Means generates larger clusters than Fuzzy C means. The size, shape and distribution of clusters differs in adaptive reasonance. According to result of this algorithm the generated cluster size is smaller than the other three algorithm results. The main similarity between generated clusters is seen in the northwest part and south part of the study region.

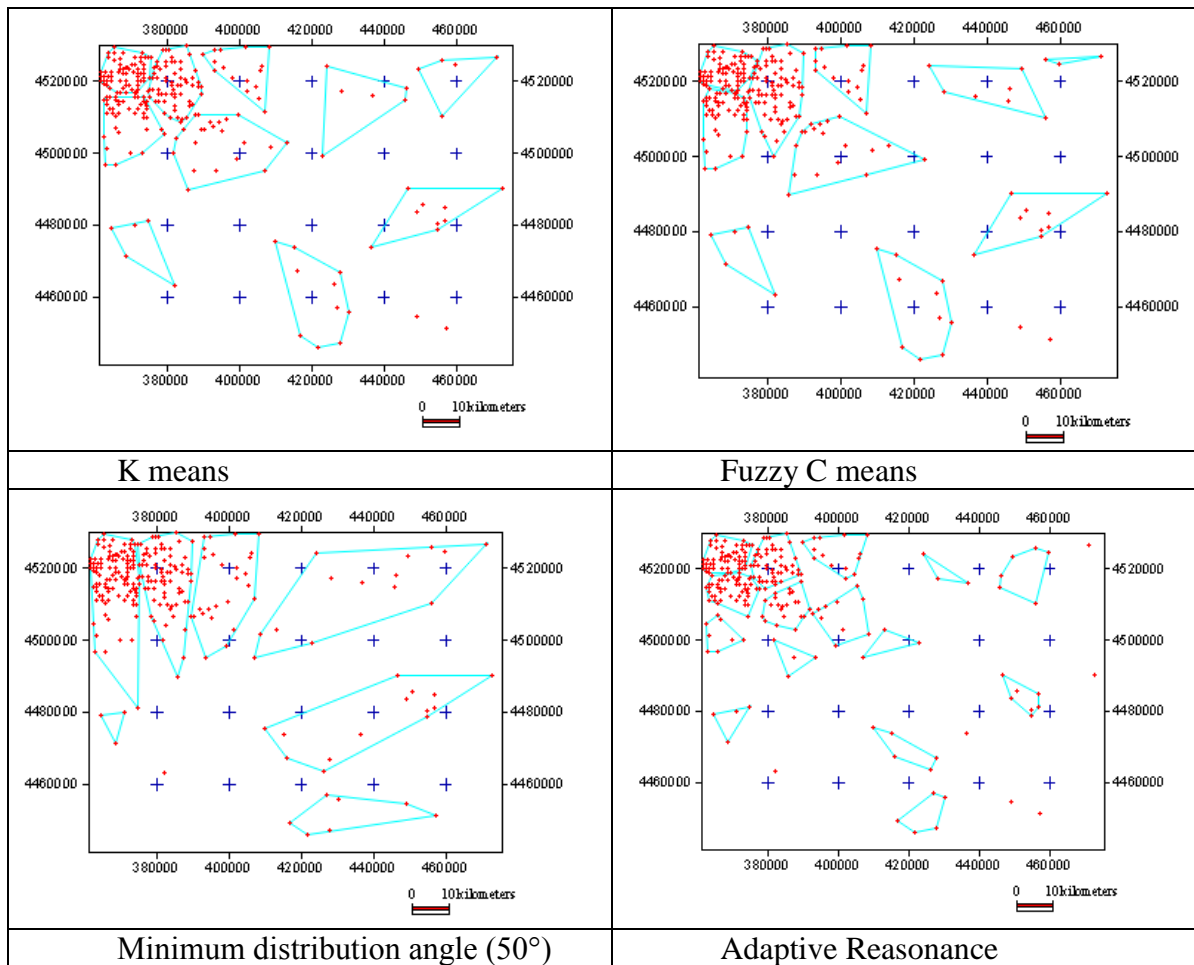


Figure 8. Clusters of earthquake epicenters

Having determined the epicenter clusters, the next stage in this phase is to determine probable active fault segments by using GIS. Results of the cluster areas are overlaid with the faults of the study region (Figure 11). Faults of the study area is compiled from studies of Öztürk et al. 1985, Rondot 1956, Türkecan et al. 1991, Demirci 2000, Öngür 1976, Ürgün 1972, Erol 1954, Şaroğlu et al. 1995.

The comparison of generated clusters with faults shows that the main orientation and location of defined probable active faults are similar to each other in K-Means clustering and Fuzzy C Means clustering N80E. Most of the faults are represented around Bolu, Gerede, NW of Güzöl and NE part of the Peçenek region. Most of the part of the North Anatolian Fault Zone (NAFZ) is defined from the results of minimum distribution clustering algorithm. According to result of the adaptive resonance clustering method; most of the probable active fault segments are located around the Bolu region. The direction and position of defined probable active faults are similar to each other. The main direction is N80E. Nearly all parts of the North Anatolian Fault Zone (NAFZ) is delineated in the Minimum distribution Clustering algorithm.

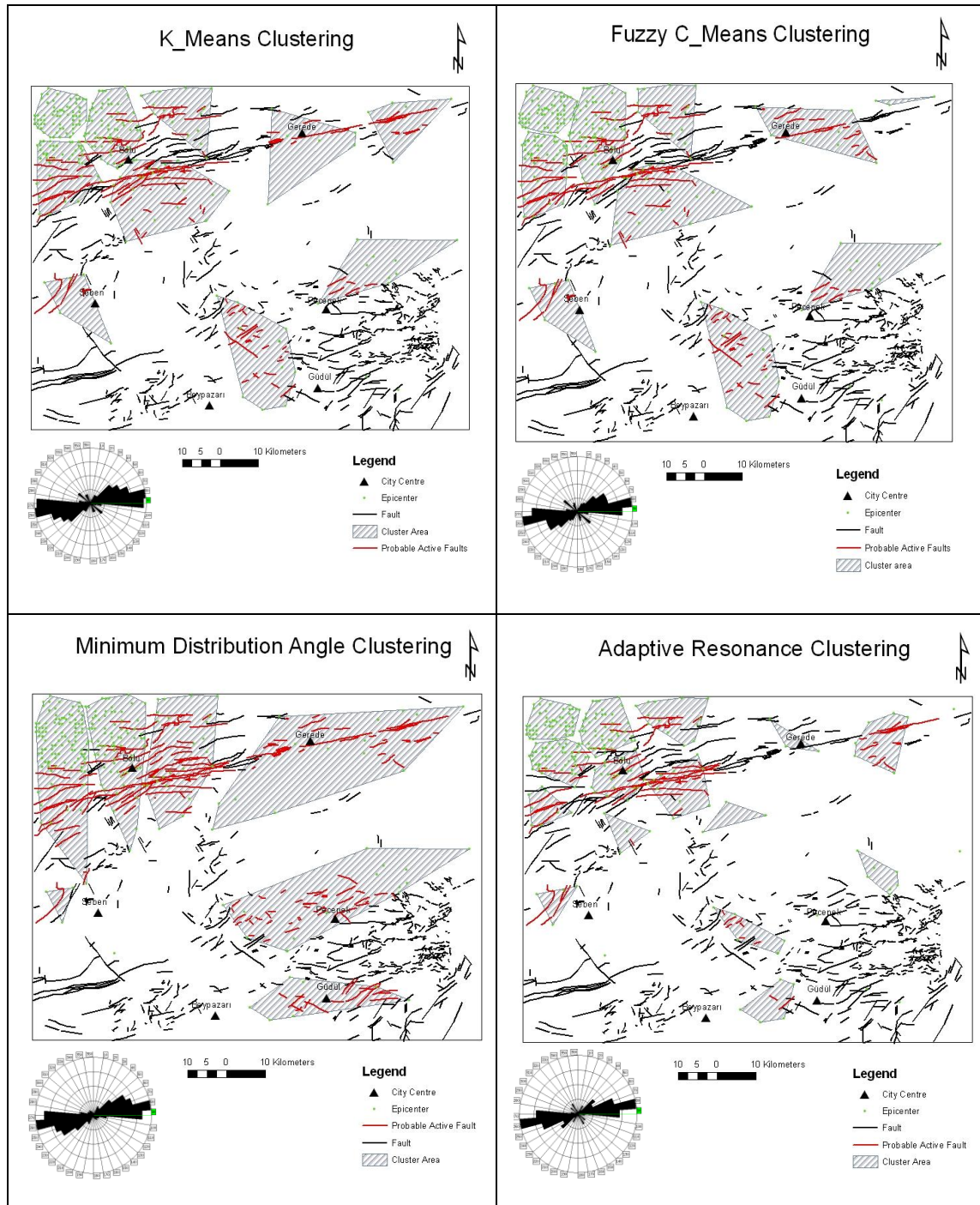


Figure 9. Probable Active Fault Zones According to Faults of the Region and Their Orientation



Conclusions

In this study, point pattern analyses techniques are integrated with GIS and clustering methods in order to identify active fault segments. It is observed that fuzzy C means and K means clustering techniques results in similar clusters, hence active fault segments obtained by using these methods are approximately the same segments. Adaptive resonance clustering gives the least number of active segments.

The overall performance of the proposed methodology can be evaluated by using the results obtained for NAFZ which is known active fault in the study region. Although minimum distribution clustering indicates largest portion of the NAFZ, all of the clustering algorithms give satisfactory results. The effectiveness of the methodology will be tested for large map scales, in which the area to be studied is more detailed and small, for further calibration by the authors.

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A MANMADE DISASTER ALONG THE BLACK SEA COST: TURKEY

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The Black Sea cost has fascinating scenery consisting of deep blue water, silver colored beaches and various tones of ever green mountain slopes embracing the beaches. The heavy construction and destruction works along the Black Sea coast are ongoing since 1996. Meanwhile, they stopped railways and waterways.

Coastal zones are kitchen of the living creatures. Planktons reproduce along the coastal zone and become food for the multicellular creatures in the sea. The motorway (coastal expressway) is killing the entire coastal environment against the constitutional law and international agreements.

The settlement places along the coastal line of the Black Sea have a linear character. The motorway is still under construction although the district law court sentence strictly prohibited. Furthermore less expensive and environment friendly alternatives have been proposed.

The road was tendered in 1996s as an access for security forces to deceive public and to provide opportunity for the international moneylenders who can not lend money to such assault. Meanwhile, maritime lines and railway transportation were stopped.

Keywords: *Green transport; motorway; Environment; Economy; Geotechnics.*

1. INTRODUCTION

The Black Sea cost has admirable scenery consisting of deep blue water, silver colored beaches and various tones of ever green mountain slopes (Yilmazer, 2002; Yilmazer et al., 2002). The countries surrounding the Black Sea are Turkey, Bulgaria, Romania, Ukraine, Russia, and Georgia from west to east. The longest costal line is along the northern Anatolia. It is about 1800 km in length. Following the martial law of 1972, they planned Turkish motorway imposed by 4 of the developed countries namely- USA, UK, Italy, and Japan (Yilmazer et al., 2001; Yilmazer et al., 1996). While the next martial law, declared in 1980, they started to construct although the urgent need for railway and waterway. The heavy construction and destruction works along the Black Sea coast are ongoing since 1996 (Yilmazer et al., 2006). Meanwhile, they fought against railway and waterway which are essential components of green transport. Since 1940s, their share in mass and public transportation went down from 60% to 5%. Over 90% of the trade in European Union countries are being done by waterway and railway whereas it is less than 5% in Turkey.



The first hook of the food chain in seas starts from the coastal area. In another saying, the coast is the kitchen of the living creatures in the sea. Planktons are unicellular creature and live along the coastal zone and become cook and food for the multicellular creatures in the sea. Even a whale feeds on this food chain starting with planktons. The motorway (coastal expressway) is killing the entire coastal environment in spite of that the constitutional law and international agreements forbidden such assault. Highway engineers, who are aware of this environmental catastrophe, do not rule the responsibilities given by the UCTEA (*Union of chambers of Turkish engineers and architects*) and the article 56 of the Turkish constitutional law.

The settlement places along the coastal line of the Black Sea have a linear character. The motorway is still under construction although the district law court sentence strictly prohibited. The other Black Sea countries are not aware of this catastrophe to Black Sea or they are not sensitive to the environment. No one can tolerate the unacceptably high cost and strong environmental impacts to the fascinating coastal areas and Black Sea herself (Yilmazer, 2006). Although less expensive and environment friendly alternatives have been proposed to the responsible authorities, they continue to destroy environment.

The road was tendered in 1996s as an access for security forces to deceive public and the international moneylenders. In 1914-1917, the Russia has occupied the Eastern Black Sea and constructed railways from harbors to inland and along the coastal line. However, it has been in use for a few ten years. Since then, the state road with a low standard has replaced the railway. Meanwhile, there would not be any improvement in maritime lines and railway transportation. The proposed peripheral highway has several advantages when compared with coastal highway in terms of timing, environment, safety, and coast (TESC). Two-level highway with a reinforced wall system can reduce the environmental impacts of coastal highway above 90% (Wheeler, 1979; Teichman et al., 1993; Turer, 2000).

2. GENERAL ASPECTS OF THE BLACK SEA

Settlements along the costal zone of Black Sea have linear character. All clustered and aligned along the narrow band of the cost. The coastal expressway kills the entire environment pertinent to the coast irreversibly (Onyari, 1991; Sansalone et al., 1997; . Particularly the environments of the planktons which are unicellular creatures are completely and forever (Fig. 2.1). The waves disintegrate the organics and inorganic continuously and prepare food for planktons (Fig. 2.2).

The coast is being filled with Cretaceous aged spilite and spilitic pyroclastics (see Fig. 2.2). Almost every second year the fill fails due to the strong waves of Black Sea (Fig. 2.3). However this lithology favors railway tunnel construction because of its massive character (Yilmazer et al., 2003).

The tendering system in the Black Sea motorway project is not turnkey type. Hence every fail and/or collapse makes the contractor happy. They are paid much more than the undersigned amount (Tanner, 1968). It means for them a new job. This is a very primitive and unacceptable tendering system which cause increase in the undersigned cost about 600%.



Figure 2.1. A manmade disaster being done along the costal line of Black Sea.

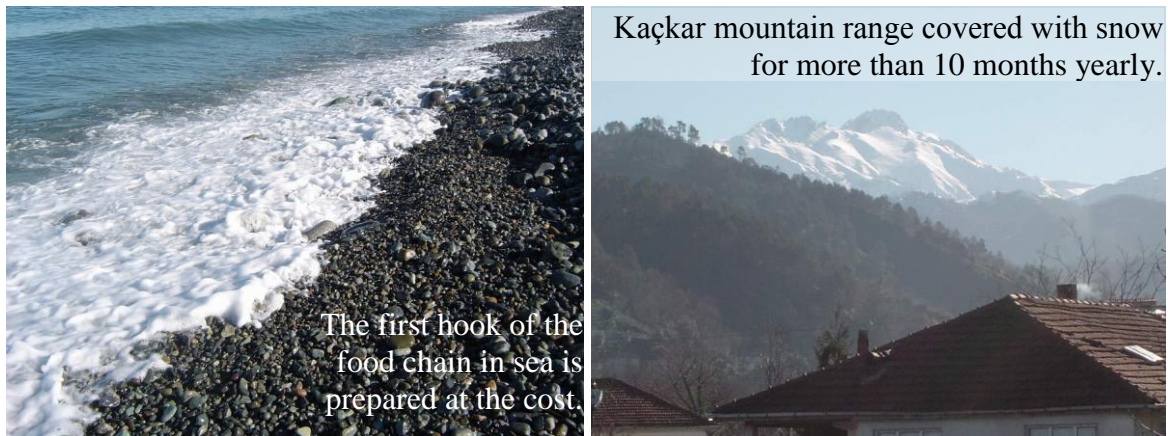


Figure 2.2. Organics and inorganic materials derived from Kaçkar Mountain range are being disintegrated and mixed thoroughly to provide food for planktons.





Figure 2.3. Failure on the road makes contractor happy due to primitive tendering system.

It might be better to remind the international acceptance in engineering works.

- (1) 20% increase in an engineering project can be tolerated as a human error.
- (2) 50% increase might be due to ignorance of the engineers who have to be interrogated.
- (3) 100% increase indicates that there is immorality and/or an ethic problem which has to be questioned and the increase have to be claimed.
- (4) 200% increase is a betrayal by the state.
- (5) Over 500% is undefined yet.

Hence, one may put forward that the coastal expressway is illegal and every thing in this project goes beyond the science. The contractors defend themselves that there is no chance to construct highway inland due to steep topography. However, this defense is not right (Fig. 2.4). A two-level highway can be constructed without destroying the environment.

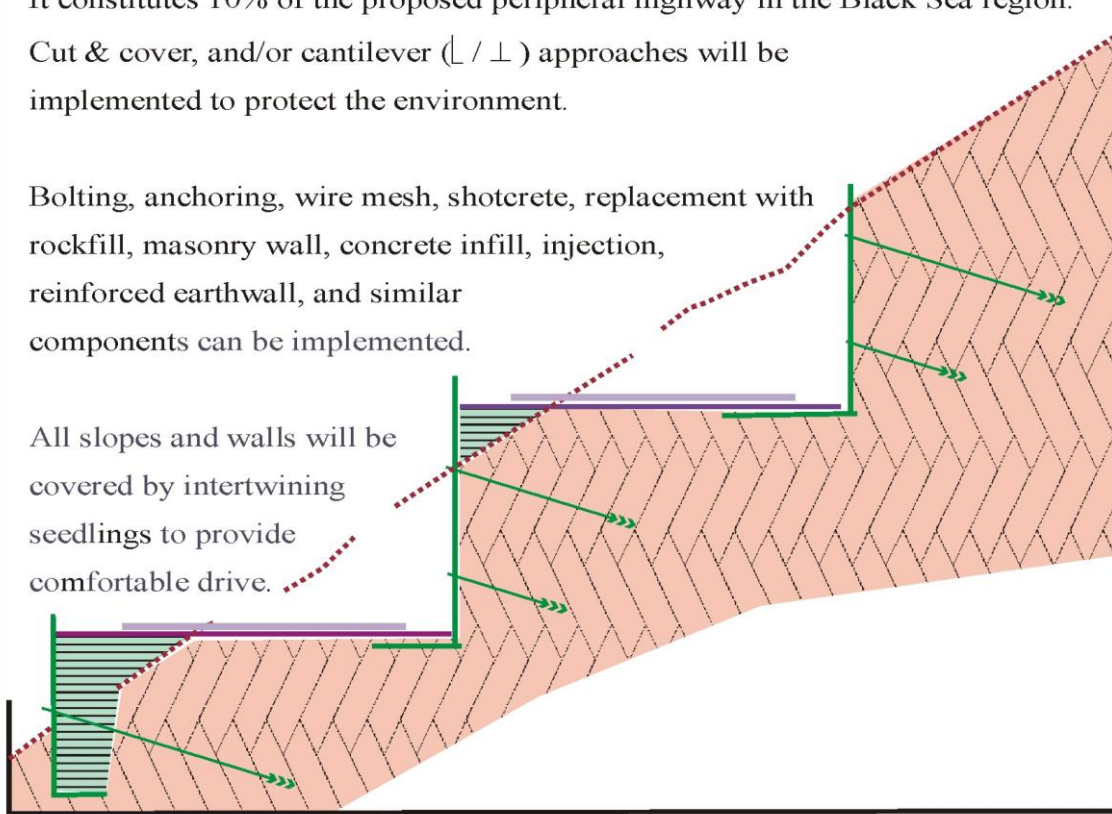


Where ground slope angle is 34°:

It constitutes 10% of the proposed peripheral highway in the Black Sea region. Cut & cover, and/or cantilever (\perp / \perp) approaches will be implemented to protect the environment.

Bolting, anchoring, wire mesh, shotcrete, replacement with rockfill, masonry wall, concrete infill, injection, reinforced earthwall, and similar components can be implemented.

All slopes and walls will be covered by intertwining seedlings to provide comfortable drive.



Where ground slope angle is 18°:

It constitutes 20% of the proposed peripheral highway in the Black Sea region. Cantilever (\perp / \perp) approaches will be implemented to protect the environment.

Bolting, anchoring, wire mesh, shotcrete, replacement with rockfill, injection, reinforced earthwall, masonry wall, and similar components can be implemented.

All slopes and walls will be covered by intertwining seedlings to mitigate traffic noise and pollution and to provide comfortable drive.

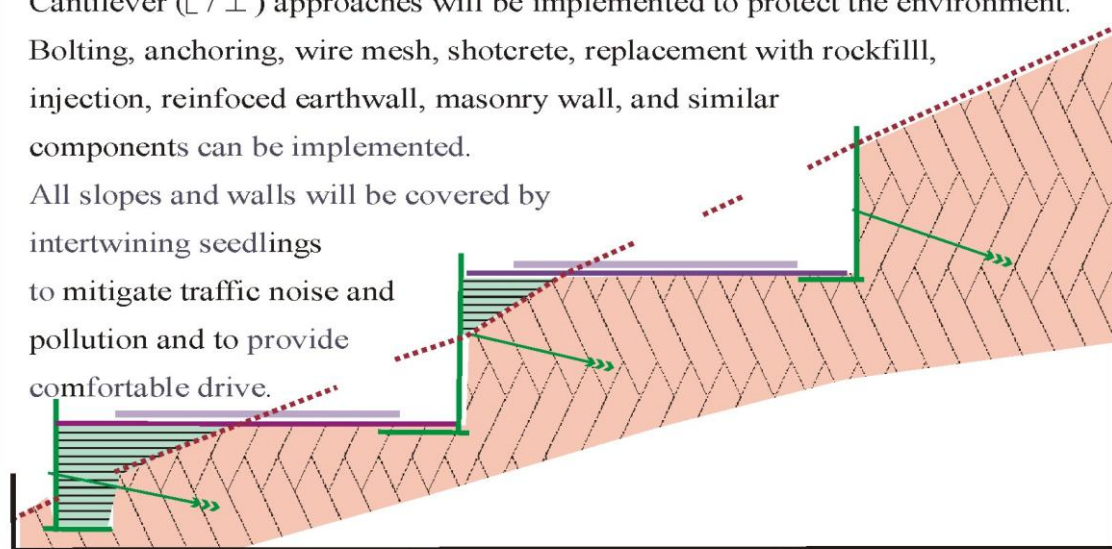


Figure 2.4. Two-level expressway recommended to replace the coastal highway.

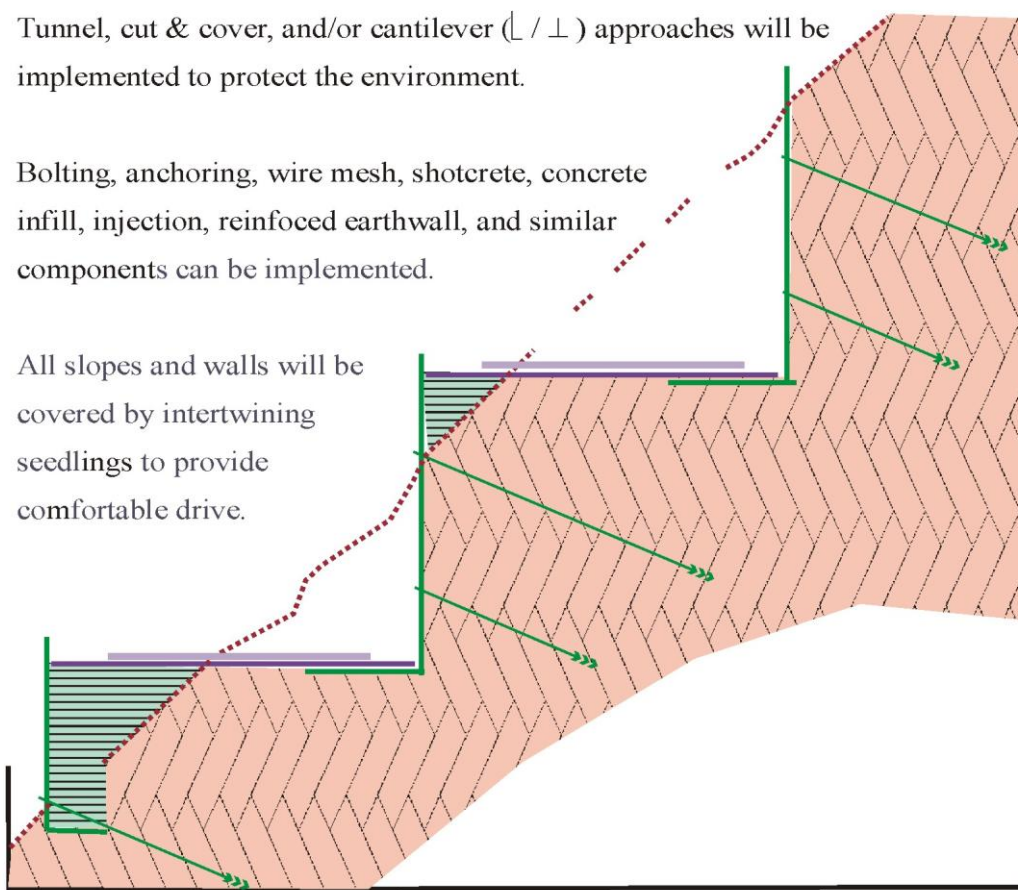


Where ground slope angle is 45°:

It constitutes only 2% of the proposed peripheral highway in the Black Sea region. Tunnel, cut & cover, and/or cantilever (\perp / \perp) approaches will be implemented to protect the environment.

Bolting, anchoring, wire mesh, shotcrete, concrete infill, injection, reinforced earthwall, and similar components can be implemented.

All slopes and walls will be covered by intertwining seedlings to provide comfortable drive.



Where ground slope angle is 18°:

It constitutes 40% of the proposed peripheral highway in the Black Sea region.

Cantilever (\perp / \perp) approaches will be implemented to protect the environment.

Bolting, anchoring, wire mesh, shotcrete, replacement with rockfill, injection, reinforced earthwall, and similar components can be implemented.

All slopes and walls will be covered by intertwining seedlings to provide comfortable drive.

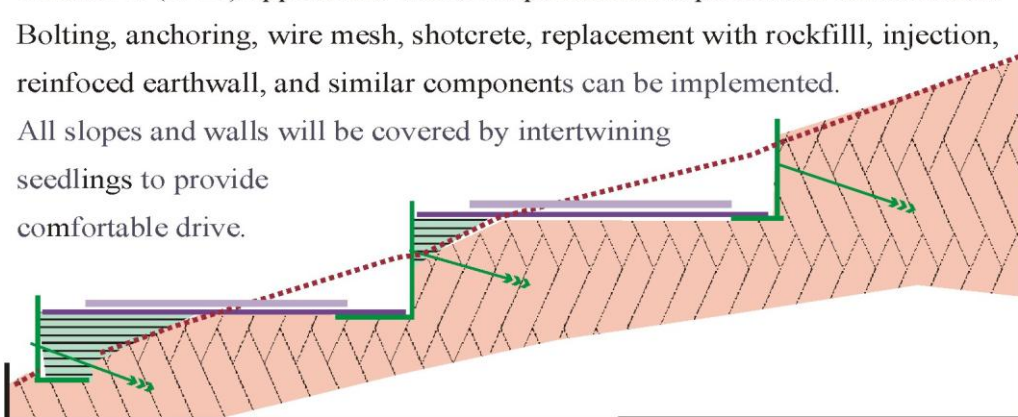


Figure 2.2. (Cont'd.).



3. SOLUTION OF THE TRANSPORTATION PROBLEM IN THE REGION

The different modes of transportation including waterways, railways, highways, airways, cableways, and pipeline are complementary of each other. They can not be in competition. However, since 1940s the highway construction is encouraged and the others are almost stopped (Fig. 3.1).

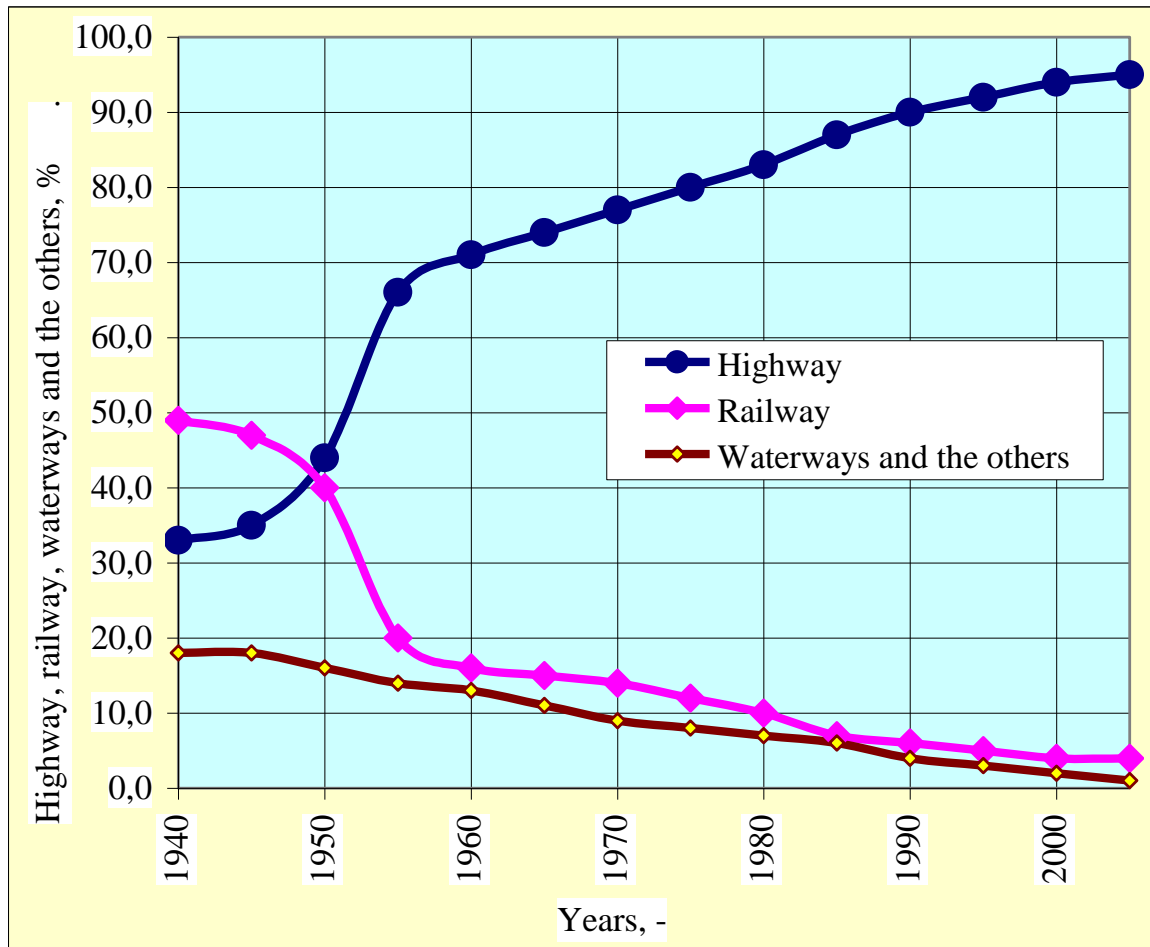


Figure 3.1. A completely wrong and unacceptable policy in transportation since 1940s. Transportation problem in Black Sea region can be solved by waterway in a few months. The necessary infrastructures are available. However, they can be improved within a short time. The 90% of the exterior trade in European Union countries is done by waterways. It less than 5% in Turkey although the country surrounded by seas. The second step in transportation works is speedy railway which is the lacking hook of the green railway from London to America through the Bering Sea. Cost of it is less than half of that of the highway under construction. The geological units which will be faced are proper for tunneling by full face tunnel boring machine (Pline, 1992; Asakura, 1998). So the construction time will be reduced by 80%. Furthermore, reinforced wall, particularly cantilever system can reduced the construction period, mitigates environmental impacts and lessens the investment appreciably (Fig. 3.2).





4. CONCLUSIONS AND RECOMMENDATIONS

It is no doubt that the coastal motorway in the Black Sea region is a disaster. It is killing the entire coastal environment which in turn completely destroys the environment of living creatures in the sea. No one can accept a highway in the sea. Waterway system has to be established in sea, not road. The main objective of killing the coastal environment is to gain unlawful money due to the primitive tendering system, the main principle of which is that the pavement is done according to the length, earthworks volume, structures, and failures during construction. Every three year period the road fails due to sea wave action, heavy flood, and/or landslides. The remedial works are paid by the state to the contractor. Therefore, the undersigned cost is increased over 200%. Besides that the international moneylenders are happy too. They are paid very high interest rate, about 8 times more than the figure in the international market. A turnkey system can easily avoid such an unlawful case. It is sad that no one attempts to stop this.

Ultimately and conclusively, it is strictly recommended to stop the assault and to solve the transportation problem by reactivating waterways at the first stage in a period less than one year. Then, the construction of railway the peripheral highway can be commenced without throwing even a single stone into the sea. The Turkish constitutional law (article 43) and international agreements forbid such assault.

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FLOOD HAZARD ZONING USING MATHEMATICAL MODEL AND GIS (A CASE STUDY JAJROOD RIVER TEHRAN PROVINCE IRAN)

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Flood is the natural hazard that always affects human living since immemorial time throughout history; it cannot completely control, but with management of floodplain, we can reduce and mitigate flood damages. Jajrood River in Tehran province of Iran because of degraded watershed conditions is susceptible stream to flash floods. GIS analysis is a powerful tool in the field of Water Resources Engineering where simulation and modeling are essential to solving problems. In this study using GIS and hydraulic model Hec-RAS, flood hazard mapping in 10, 25, 50, 100, 200-years hydrologic return periods Delineated. Hec-GeoRAS extension that links GIS and Hec-RAS has high capabilities in hydraulic analysis water surface profiles and flood zoning.

Keywords: *Flood Hazard Zoning, GIS, Hec-RAS, Hec-GeoRAS, Jajrood.*

INTRODUCTION

The deltaic part of east Tehran Province traditionally identified as a one of flood prone area of Iran. Most of the flood management strategies in this region have geared towards 'preventing' flood by an attempt to contain the river. Very little attention is pay on formulating rational land use planning to reduce flood-induced disaster. Floods result not only in direct financial costs to residents, farming, commercial and industrial enterprises, but also in indirect costs to various activities, and 'intangible' social and environmental costs. In common with most studies of flood damage costs, a distinction has made between three groups of damages [Fig.1].

Direct (tangible) damages comprise the physical impact of the flood, for example, damages to structure and contents of buildings, agricultural enterprises, and regional infrastructure.

Indirect (tangible) damages comprise losses from disruption of normal economic and social activities that arise because of the physical impact of the flood; for example, costs associated with emergency response, clean up, community support, as well as disruption to transport, employment and commerce.



Intangibles or non-marketing impacts comprise losses that cannot quantify in monetary terms. For example, loss in biodiversity or increased stress levels for residents following a major flood event affecting their homes [8]. Flood risk maps are essential for the successful implementation of a range of flood hazard mitigation measures (such as land use regulation, insurance, emergency measures, and assessing damage potential) and important in controlling future development in these hazardous areas [10]. Preparation of a comprehensive flood hazard map for Jajrood River would be the one of most crucial steps for implementing non-structural remedial measures for mitigation of flood.

This paper attempts to synthesize the relevant database in a spatial framework to evolve a flood hazard map for Jajrood River of latyan basin that passed inside of lavasan city. Geo Information System (GIS) extensively used to assemble information from different maps and digital elevation models.

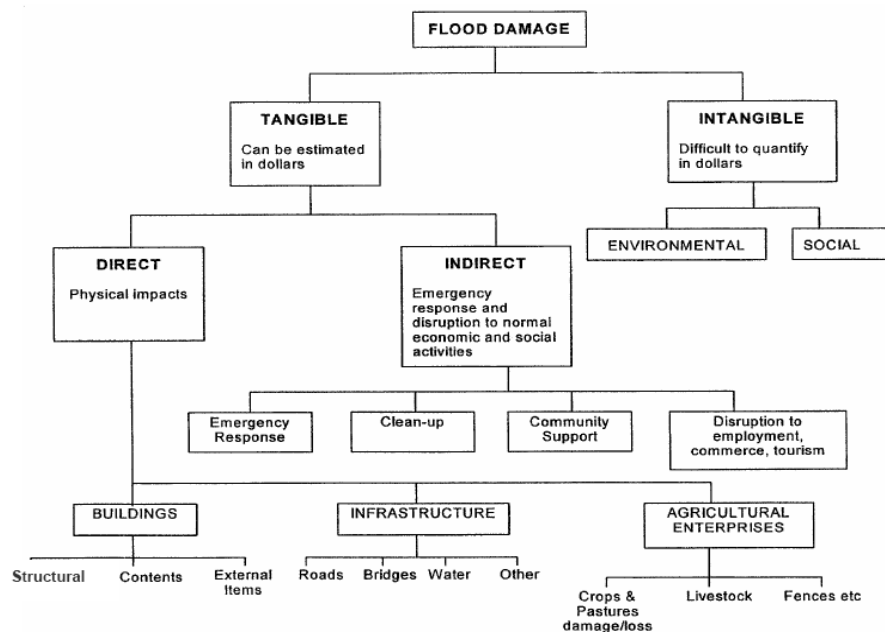


Fig. 1 Types of Flood Damage Costs [8].

The increasing availability of very high performance GIS packages such as ArcView GIS and ARC/INFO offers new opportunities for engineers to perform flood inundation analysis in conjunction with hydraulic models [1, 2]. The GIS technology has the ability to capture, store, manipulate, analyze, and visualize the diverse sets of geo-referenced data [1]. On the other hand, hydraulics is inherently spatial and hydraulic models have large spatially distributed data requirements. This application of GIS is important in the field of engineering because, software allows faster, more accurate modeling of real systems through their ability to automate repetitive functions with minimized errors. Specific to HEC-GeoRAS, hydraulic engineers will find that employing GIS software captures realistic channel bottom geometries, improves the accuracy of floodplain delineation, and provides new analytical tools in the form of depth and velocity grids that were previously unavailable.



MATERIALS AND METHODS

Two major rivers of the latian basin have selected for the current study. These two rivers are the distributaries of Jajrood River [Fig 2]. Within the watershed of the latian has caused accelerated sedimentation, which is slowly destroying soil and water. The watershed area is 66.7 square Km of steep ridges and small streams with high velocities. Mapping of flood hazard is not a new approach in the developed countries. Federal Emergency Management Agency (FEMA) is one of the most active and well known in this sphere Development [9].

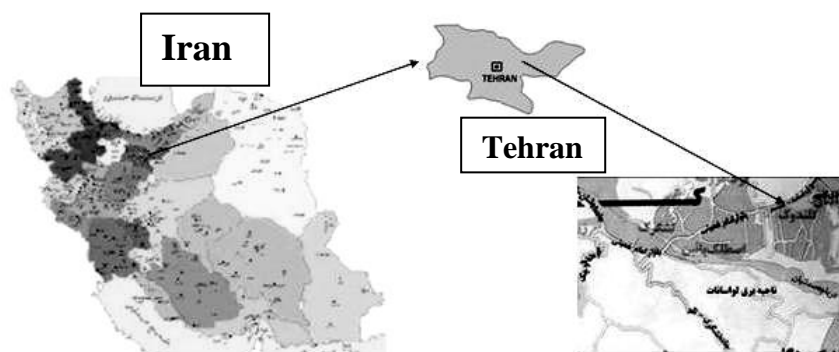


Fig. 2 Study Area-Jajrood River Tehran Iran.

I

n order to mapping floods, we must know the frequency distribution of the peak flow at any point. Thus Daily and instantaneous peak discharges from 1971 to 2001 have been analyzed and the best distribution of that data selected by SMADA software that is Log Pearson III Table one show the discharge result of 5, 10, 25, 50,100,200-year return period. Then we generate TIN of floodplain geometry using 1:500 scale topographic maps. The traditional methods of measurement are too long and too expensive to use. To reach best inundations map we use 172 cross section in 4 km of rivers reach that pass in lavasan city. Estimation of Manning's coefficient in each reach has done using SCS method.

Table1: Estimation of different return period discharge in najarkola hydrometric station

200	100	50	25	10	5	return Period Discharge (m ³ /s)
66.74	55.5	45	36.06	25.21	17.93	Daily peak discharge
132.5	113.6	95.2	77.6	55.4	39.4	Instantaneous peak discharge

PreRAS

Geographic information system (GIS) interface called HEC-GeoRAS has developed at the University of Austen, Texas, by improving a previously issued Arc-View extension (AV-RAS) [6].



After loading the 3D Analyst, Spatial Analyst, and the GeoRAS extensions, the user can add TIN data to begin the project. The features of the Pre-RAS menu allow the user to generate the geometric data and the RAS GIS import file that will transport the data in a readable format for HEC-RAS. The items in the drop down menu should follow in order to ensure accurate completion of the geometric data. Using the drawing tools of ArcView GIS 3.2, the user makes line themes in the project. Engineering judgment is applied when drawing the center of the stream, its banks, and the over bank flow paths. HEC-RAS Simulation of Water Surface profile will calculate based on flow data and Energy Equation. Also free at the HEC website, HEC-RAS performs one-dimensional steady and unsteady flow calculations for a natural or constructed channel. HEC-RAS also has the capability of importing GIS/CADD data to aid in model construction. It has modules for culvert flow, bridge flow, floodplain delineation, bridge design and bridge scour.

HEC-GeoRAS allows the transfer of geometric data from ArcView GIS to use in the Geometric Data Editor of HEC-RAS [Fig 3]. The user completes any additional geometry, provides flow data, provides boundary conditions, and performs a steady flow analysis (in this case). The resulting calculations from solving the energy equation indicate the water surface profile and other data in tabular or graphical form. The first law of thermodynamics, known as

the conservation of energy equation, allows for the computation of a water surface elevation. It states that the head energy at a point downstream equals the head energy upstream minus the head loss due to friction between the points. Manning's equation applies to open channel flow and using to calculate the discharge rate at a cross section of stream using an estimated value of roughness called Manning's n . One result of applying the energy equation is the water surface elevation, or height above the channel bottom at each calculated cross section. When compared to the elevation of the surrounding terrain, a floodplain delineated to indicate the level to which the water will rise. The old method for doing this called for hand drawing cross sections on topographic, or quadrangle, maps, and recording the contour lines that were crossed.

This modeling extension allows coping with quasi-2D aspects of flow through connecting the river geometry with a digital terrain model in the form of a Triangulated Irregular Network (TIN). In this way, the distributed output provided by HEC-RAS for each cross section interpolated between cross sections and results in a water depth and a water velocity surface. When compared with a fully 2D flow model, the only limitation is in giving a flow velocity, which disregards transversal components of the flow field vectors, on their side usually deemed negligible in stream hydraulics [7].



PostRAS

Following satisfactory results from HEC-RAS, the RAS GIS export file is loaded into the ArcView GIS project using the commands under the PostRAS drop down menu. Floodplain delineation, water depth, and water velocity themes generated using the PostRAS features [Fig 6]. The base themes that created include the stream network, cross sectional cut lines, cross section surface lines, bank station lines, water surface profile bounding polygons, and velocity mass points. A water surface TIN created independent of the terrain TIN. Next, the water surface TIN and the terrain TIN are rasterized to create the floodplain—areas where the water surface elevations are higher than the terrain elevations [10]. Results exported from HEC-RAS imported into the GIS using GeoRAS. Data exported from HEC-RAS included water surface elevations at each cross section, velocity information at distributed points along each cross section, and bounding polygon information. The bounding polygon information defined the extent of each cross section as modeled in HEC-RAS for the given flow. Floodplain delineation and velocity data developed which adhered to the bounding criterion.

RESULTS AND DISCUSSION

Non-structural measures should play a key role in any integrated flood management strategy. In terms of benefits and costs forecasting, warning, zoning, and building controls can be particularly effective in mitigation of flood impact. An essential component of any strategy is community involvement and education [4, 5]. Using 1:500 topographic map scale to generate TIN and water surface elevations, the line themes, and land use themes created for import to HEC-RAS for analysis of the main channel. HEC-RAS computes the water surface profile at each cross section, and flow and velocity distribution data if selected. HEC-GeoRAS allows this information to read into ArcView GIS for the generation of the water surface TIN and floodplain themes. A depth grid can created to show the discrete value of water surface elevation above the channel bottom. These GIS tools are effective in delineating a floodplain for a given flow condition, as well as providing depth and velocity grids for further engineering analysis.

After running of model, water surface profiles calculate by HEC-RAS .using HecGeoRAS, Interface between ArcView GIS and HEC-RAS flood hazard map presented. Fig 3 to 7 shows the flood hazard map, cross sections profile, and water table profile.

GIS provide a powerful tool for visualizing and processing spatial data. In particular, HEC-GeoRAS provides procedures, tools, and utilities that assist in the development and analysis of hydraulic models by allowing engineers unspecialized in GIS operation to view a "real-world" representation of the system under study. However, GeoRAS does not just help engineers focus on engineering concerns; it facilitates communication between decision-makers involved in plan formulation, hydraulic analysis, and public inquiry [7].

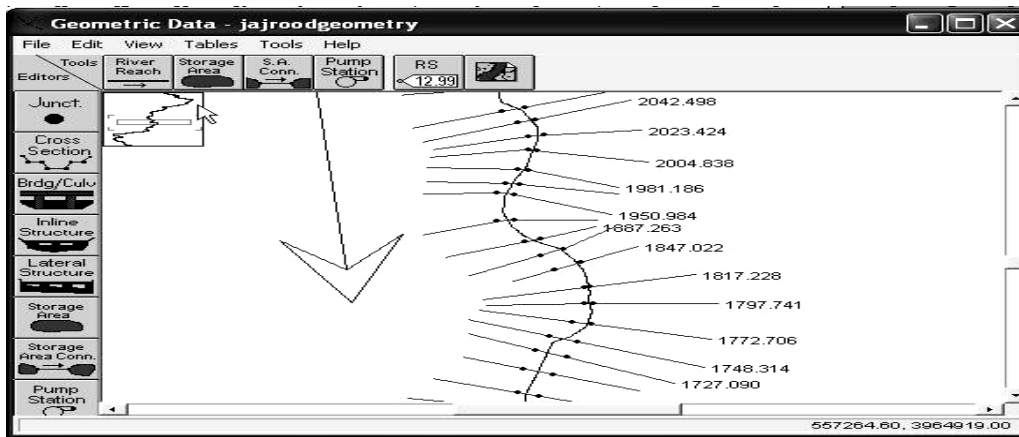


Fig. 3 Import of Geometric data from GIS to HEC-RAS

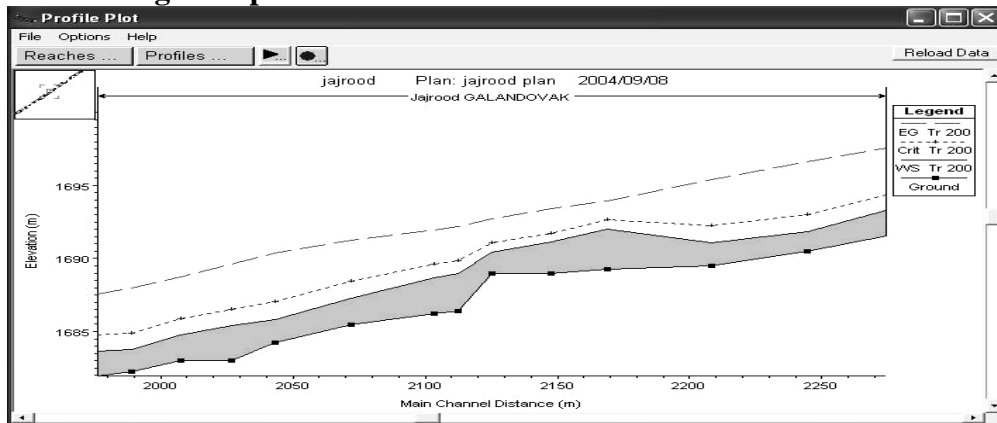


Fig. 4 Length profile of 200-year return period of water

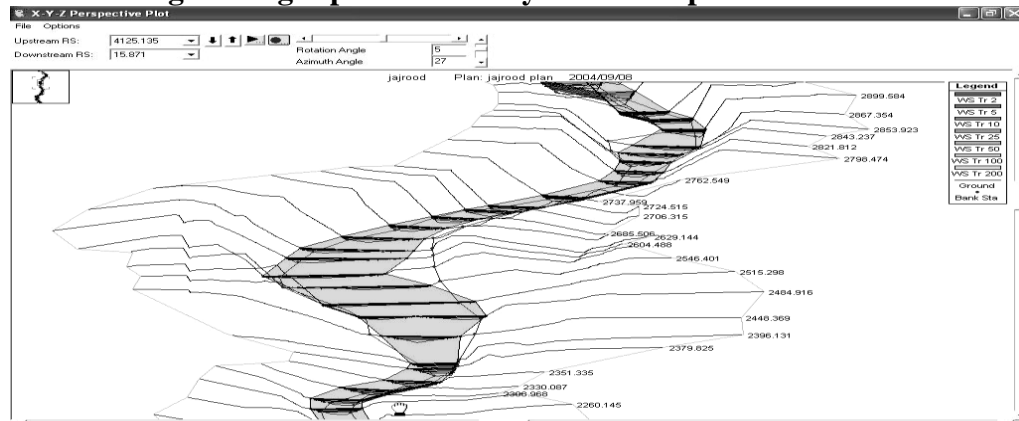


Fig. 5 Show 200 year flood hazard map in Hydraulic model (HEC-RAS)

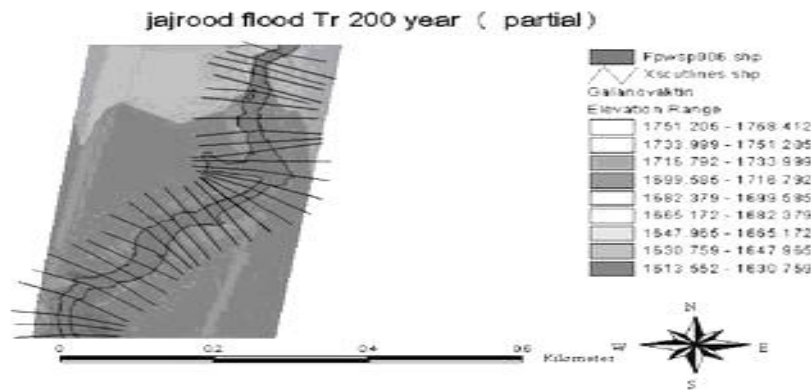


Fig. 6 Show 200-year flood hazard map in GIS

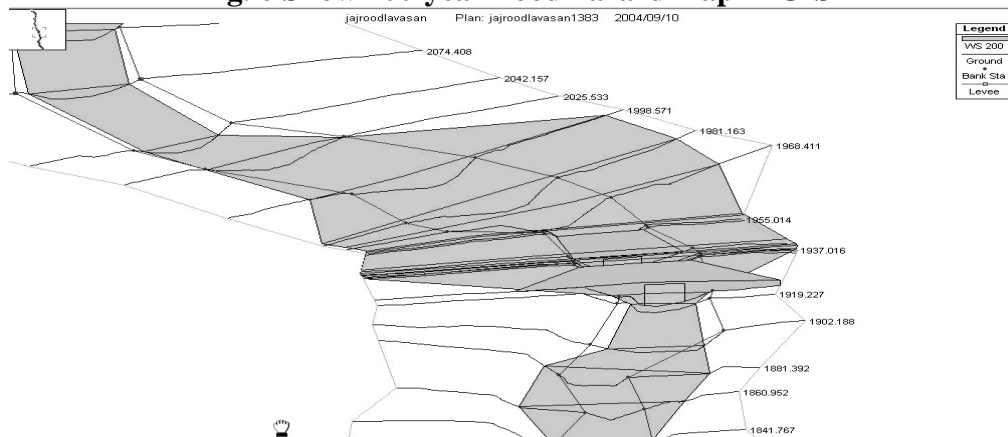


Fig. 7 Show 100-year flood hazard map in imam Street Bridge of lavasan city

CONCLUSION

Using mathematical model and GIS, we are able to design effective flood control structures or water supply facilities. This study shows a simple and cost effective way to use geographical information system for creating flood hazard map from the available database [3].

While GeoRAS greatly facilitates hydraulic model development and analysis with HEC-RAS, results must carefully examined with cautiously drawn conclusions. Identification of errors by visual inspection of hydraulic model results leads to in an iterative process for model refinement.

Another approach of this study is Flood Insurance. Actually flood insurance can not consider as flood mitigation but it is best way to distribution huge amount of flood damages which occurred in a local area and society in a very short time, to the national wide of flood-prone area with enough time from past to present. By the other hand flood insurance, distribute damages in wider reach of area and time. Because it for the inundation area flood, damages will be more acceptable.



This project focused on linking GIS tools to Hydraulic analysis. The notable acquirement from this project is that engineers could reduce time to prepare geometric data. Before using GIS, geometric data preparation is time-consuming and painful work. However, GIS allows the engineer to concentrate on hydraulic principles rather than data preparations. If detailed TIN data given, results that are more accurate would produced. It is easy to confirm results (Floodplain extent, flood depth, velocity). Meanwhile, there is a one thing that improved at next version of HEC-GeoRAS. Because of the geometric interpolation routines in HEC-RAS, inaccurate results calculated if number of cross sections is not enough. Thus, lots of cross sections need by manual work. In this study, using 174 cross sections present as more as accuracy. It has become increasingly clear that the search for sustainable and optimized ways to cope with floods needs a more comprehensive and broadly based response from society in general or, in other words, integrated flood management approach has necessarily to be the concern of all population living in areas under flooding risk.

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AN ENVIRONMENTAL and ARCHITECTURAL APPROACH FOR USING EXTERNAL STRENGTHENING METHOD ON REINFORCED CONCRETE BUILDINGS IN TURKEY

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During the last decade, big major earthquakes that caused significant casualties and extensive structural damage have shown that the structures (especially reinforced concrete) in Turkey are far from possessing qualities that would ensure satisfactory seismic performance. It is known that an important part of building stock in Turkey is reinforced concrete and some pre-earthquake rehabilitation methods should be applied in order to prevent similar results. One of these methods is to determine the earthquake performance of existing structures especially official buildings and residences by starting from earthquake prone regions, and to strengthen / rehabilitate insufficient buildings. Many reinforced concrete (RC) structures have been also repaired using different technique after the recent earthquakes so far. The strengthening techniques for RC framed structures include addition of infill wall, steel bracings and adding brick-CFRP infill to weak bare frame. All the existing different methods need emptying the building during the strengthening process. This creates serious problems since the need for a temporary accommodation for the residents arises. Especially for official buildings (schools, hospitals etc.), it is not feasible to evacuate a building in use for a while.

In this study, first of all, earthquake damages on RC building will be mentioned with architectural perspective. In this part, the role of architects and common seismic design faults will be discussed. In the second part, existing strengthening strategies of RC buildings will be given. In this chapter, environmental and architectural problems will also given during strengthening applications. At the third, a new method is introduced for external strengthening of typical reinforced concrete buildings that represent the majority of the built environment in Turkey. In this part, some experimental results about external strengthened method (ESM) performed in the Earthquake Research Laboratory of Civil Engineering Department of Selcuk University, Engineering and Architectural Faculty will be given. At the final stage, experimental results and the feasibility of this method from the architectural and environmental viewpoint will be discussed.

Keywords: *Reinforced concrete buildings, Strengthening, Architectural design, architectural and environmental viewpoint*



1. Introduction

Turkey is situated on an active earthquake zone with shortest return periods and earthquakes caused loss of lives in the history. In the last century, over than twelve major earthquakes with minimum magnitudes 7 (Ms) caused significant casualties and extensive structural damage in Turkey. The structural damage in all the recent disasters, considering the magnitude of the event, was much heavier than one would normally expected in a country better prepared for disasters [1].

The earthquake resistance of buildings depends upon three quite different processes in design. There is the overall layout of the building which determines the magnitude of the forces which come onto the building and their distribution: a distribution which is important in the vertical direction in section as well as the horizontal direction in plan. Secondly, there is the ability of the various parts of the building to resist these forces, the strength of individual members and the connections between them. Thirdly there are those aspects of construction, which are rarely mentioned at all, non-structural or architectural aspects of building, non-load bearing walls and finishes. These may constitute a significant proportion of the mass of the building, their behavior may be quite independent from that of the main structural elements, and may cause serious danger to people or buildings [2]

Leave the non-engineered buildings aside, engineered structures in Turkey are far from possessing qualities that would ensure satisfactory seismic performance. Especially, the damages occurred on the public buildings were more serious and irrevocable when compared with the damages took place on private buildings because of some reasons. The strengthening of existing public buildings (primary school buildings, hospitals, etc.) in accordance with new contract specifications, thereby reducing losses of life and property to a minimum in case of an earthquake, has become one of the important issues on the agenda of the Turkish government. However, the strengthening of the existing public buildings by using the available methods is so difficult, because the strengthening works take a long time, the user of these buildings are obliged to evacuate the buildings and also there occurs extra costs caused by the additional repairs and renovations within the buildings when these methods are used.

Studies in the literature that are devoted to the strengthening of reinforced concrete buildings usually concentrate on methods of strengthening that will be performed inside existing buildings (by using infill frames) [3-7]. Such work to be done in the building, on the other hand, requires the evacuation of especially the intensively-used public buildings during the strengthening and renovations that may take months. Moreover, this leads to substantial additional construction work within the building, alters its architecture and increases costs. This often causes the appliers and users to take a lukewarm attitude towards the strengthening of buildings. In this study, first of all, earthquake damages on RC building will be mentioned with architectural perspective. Then, strengthening of existing RC buildings, necessity of strengthening existing buildings, problems arisen in strengthening application and environmental and architectural problems will be discussed. At the final stage of this paper, experimental results and the feasibility of this method from the architectural and environmental viewpoint will be discussed.



2. Earthquake Damages on RC Building with Architectural Perspective

Although there are a large number of seismic codes throughout the world, most concentrate on structural elements and are written for engineers rather than architects. Few countries seem to have special codes of practice on this subject. Where such codes deal with architectural issues, the problem is that they are ignored and not regarded as the architects' donation to earthquake resistance. While much of the Codes for Seismic Design is directly or indirectly related to the architectural characteristics and configuration of buildings, all activities in the field of earthquake mitigation are concentrated on the structural aspects and analytical calculations.

2.1. The Role of Architects in the Seismic Design

The structural system of almost every building is decided by the architect according to the requirements of the architectural design. After the architectural design reaches a certain state, the structural engineer fits into the design the proper structural system. However, there is not much freedom the structural engineer can exercise. The character of the structural system is already built into the design by the architect. If the structural system, as enforced by the architect is not adequate in terms of earthquake resistance, there is very little the structural engineer can do to make it otherwise.

2.2. Common Seismic Design Faults due to Architectural Design

After the last earthquakes (1992–2004), the total damage and the consequent loss of life in Turkey are humiliatingly too great as compared to those for similar intensity earthquakes recorded elsewhere in the world. Main structural design and construction mistakes causing collapse of the reinforced concrete buildings in Turkey are same with the observations after previous earthquakes (Figure 1). Some important lessons for design and construction practice can be learned from damage observed during last earthquakes. Ductile detailing and construction is needed to control damage level and to guarantee survival after earthquakes. The inadequate structural systems and/or members, low quality materials and inappropriate construction are main reasons of the damage. Common mistakes can be listed as follows;
General mistakes,

- Use of low quality concrete, especially low compressive strength,
- Mistakes related to selection of settlement sites. Especially settlement on the sites where alluvial deposits exist and liquefaction danger is high,
- Use of non-ductile details and design,

Architectural design mistakes,

- Placement of columns with orientation of strong axis on the same direction,
- The soft and weak story phenomenon,
- Short column problem,
- Heavy cantilever overhangs,
- Unsymmetrical buildings,
- Adjacent buildings with no separation,

Construction mistakes, (not obeying project of the structure).



Figure 1. Totally collapsed RC building due to the architectural and design mistakes

3. Strengthening of Existing RC Buildings

Strengthening of reinforced concrete buildings is one of the main concerns in Turkey. Heavy damage and total collapse of RC buildings after the major earthquakes in the last three decades has initiated studies on strengthening techniques. One of the main reasons for catastrophic results after the earthquakes is the inadequacy in lateral stiffness. The necessary amount of strengthening must be provided to increase the lateral stiffness and to improve the seismic behavior of buildings.

The existing strengthening methods are based upon rehabilitation of the seismic performance of buildings (Figure 2-3). They propose either some modifications on the existing structural members of buildings or adjoining additional structural members on appropriate parts of the structure.

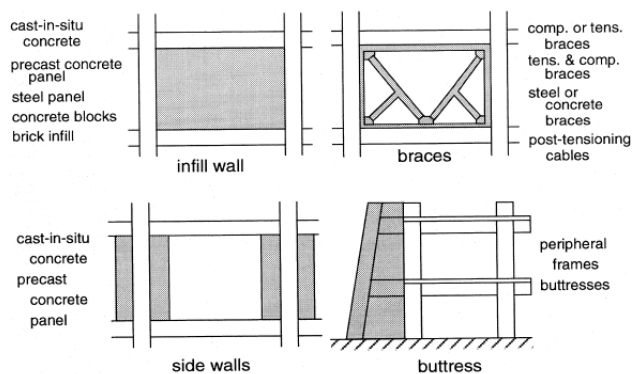


Figure 2. Typical frame strengthening techniques [8]

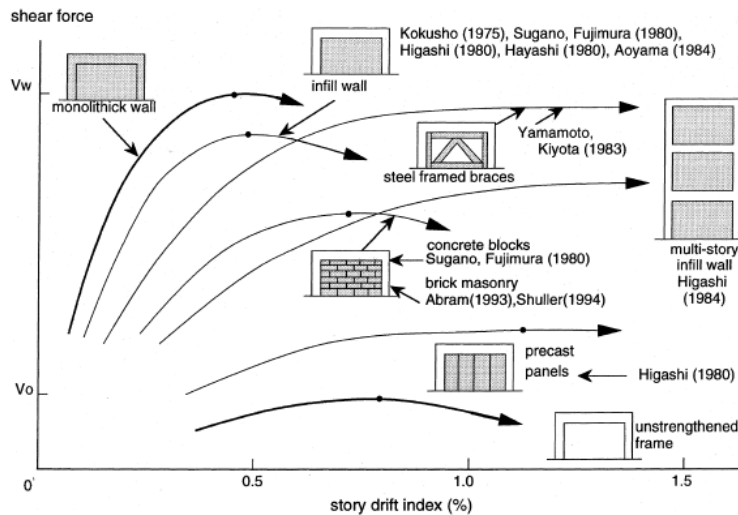


Figure 3. Typical load-displacement relationships of strengthened frames with various techniques [8]

3.1. Problems Arisen in Strengthening Application

- In the strengthening stage of an existing RC building, the appliers can face on some issues. These problems can be caused as follows;
- projections in plan,
- irregularity, dislocation and discontinuity of columns,
- beams, slabs and shear walls,
- floor discontinuities,
- soft story irregularity [9],

Besides the listed conditions, the other important problem is due to the configuration of the corner columns. In many applications and layouts of private buildings, the corner columns are located inner axe of the buildings. However, in the public buildings, especially schools and hospitals, the column members of structural frame are located in the exterior axes.

3.2. Environmental and Architectural Problems

The encountering problems during the strengthening process is given below,

- The necessity of evacuation of the existing building,
- The alteration of the building architecture with new additional load bearing systems,
- Image pollution causing from strengthening methods.



4. External Strengthening Method (ESM)

Efforts aimed at rehabilitating existing buildings in Turkey intensified after the earthquake in the province of Erzincan in 1992 [10]. The experiments conducted demonstrated that strengthening through reinforced concrete external shear wall significantly increases the building's strength and rigidity (stiffness) [11]. In the studies performed so far, the method of inside reinforced concrete shear wall strengthening (infill wall) has gained precedence over others. However, this method has certain shortcomings: it alters the building's interior architecture; the user has to evacuate the building for a long time and considerable amount of alterations and additional work need to be done inside the building.

The application of shear wall, which are very crucial in the strengthening of buildings, by moving them to the outside of the building rather than within the axis of the building can easily be carried out since public buildings like schools and hospitals are in detached form.

The most significant advantages to be gained by this method are;

- Being able to do strengthening works, which will take a long time, outside the building,
- The user of the building will not be obliged to evacuate the building,
- There will be no extra costs caused by additional repairs and renovations within the building.

Such reinforcement will not pose any architectural problems since commonly used primary school projects and hospitals in Turkey are in multi-purpose gardens. The view of the surroundings of a building is given in Figures 4 if a system of strengthening that is performed towards the end of the building and on both sides is applied in primary school buildings

(Figure-5). The view that will emerge as a result of the strengthening of typical projects is prepared on computer.



Figure 4. Existing primary school before strengthening with ESM



Figure 5. Existing primary school after strengthening with ESM



4.1. The Contribution of ESM to Existing Weak Frame Behavior

Even if the analytical performance of this method to be applied has been proven [9], it is necessary to conduct an experiment to see the problems that may arise in reality. For this purpose, in the present study 4 identical reinforced concrete frames were produced that were two-storied, two-spaced, modelled on a 1 / 3 geometric scale, had the structural deficiencies and construction that are frequently encountered in our country and whose seismic behaviour was weak; two were bare (unstrengthened) while the other two were strengthened with reinforced concrete external shear wall and they were tested under cycling lateral loading that represented real earthquake load. The levels of axial force to be applied to the columns of experimental elements were so designed as to create compression failure in columns.

4.2. Test Results

- The lateral load-bearing capacity increases between 3.76 and 4.19 with the strengthened of the frame system.
- No significant and deep cracks occurred in the existing frame system at the level of maximum lateral load level of the strengthened system (in this case the ratio of story drift is 1.5 %-2 %).
- No separation or detachment whatsoever occurred until the end of the experiment in the junction achieved through anchorages between the frame system and the shear wall (including the foundations). The vertical shear wall bars on the shear wall edges broke off without any anchorage scraping in later cycles [12-13].

5. An Environmental and Architectural Approach for Using ESM on RC Buildings

5.1. Advantage of ESM

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5.2. Disadvantages of ESM

- ESM and other strengthening methods sometimes result in undesirable geometric ratios on the building's facade in terms of architectural aspect. Adding of extra structural elements negatively affect aesthetics of the building. Architects don't long for adding structural members.
- The exterior applicability of the ESM includes great modifications and interruptions to the architectural form of the building.
- The residential buildings in Turkey, unfortunately, could not be said to have a harmonious appearance. It is not impossible to apply ESM all buildings.
- Balconies are the basic elements to break the monotonous effect of facades in general; however, the situation that is observed in eaves is again in question, in a different viewpoint [9].
- Another important point in the application of the proposed method is that it greatly affects not only the building itself but also the environment in which the building gets situated. There might be a need for serious changes in the environment since the shear walls may be thought to be great interruptions, especially on pavements or on streets.

6. Results and Discussion

In this study, the behavioural change was studied of the concrete frames of low seismic-resistance that bore most of the structural deficiencies and construction characteristic of existing and common concrete primary school buildings in Turkey. According to the study;

- The existing inventory of public buildings in Turkey has low seismic resistance and these buildings need to strengthen in accordance with the new regulations (codes).
- Especially strengthening to be performed on the inside of these buildings will limit the use and architecture and also cause disruptions in the educational programme, health service etc.
- External shear wall application will be a practical and economical solution for these detached buildings. There will be no changes made to the interior architecture of these buildings.

In conclusion, it was observed that the strengthening and system improvement performed through adding external reinforced concrete shear wall to the reinforced concrete buildings will add improved behaviour, strength and rigidity to the system with its low cost besides ease of construction and application. Developed for the existing reinforced concrete public buildings constructed as typical projects in Turkey, this method will be able to be implemented in most of them without any problems.

As a result, this thesis could be utilized to provide continuity between the fields of architecture and structural engineering, as well as between the fields of architecture and environmental planning



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SOIL SUSTAINABLE – AS A FUNCTION OF ITS ECOLOGICAL AND TECHNICAL WAY OF USE

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R e s u m e: Soil is one of the most important natural resources, wherein, together with water, air and organisms, it represents ecosystem. Practically, soil is nonrenewable natural resource, and when once destroyed, process of its development takes a long time.

Use of soil is multifunctional, thus from the aspects of its ecological and technical functions. **Ecological** functions include: plant production, habitat of large number of micro and macro organisms, production of food and raw materials. **Technical** functions include different aspects, such as: settlements, industry, roads, water accumulation, raw material exploitation, waste disposal and other.

On the territory of BiH, soil losses amount to 3.000 ha, and they are constantly increasing. Arable land per inhabitant is 0,20 ha, and agricultural land 0,60 ha. As a result of soil destruction, large areas, of so called Technical deserts, were formed, and these areas exceed 20.000 ha. The main worry is how to achieve harmonization of ecological and technical functions. In regard to sustainable soil development, it is not possible to maintain status quo, but **viable**. Protective measures and recovery of damaged areas have been developed.

Key words: *Damaged soil Syndrom, ecological and technical functions, Anthropogenic and Technogeneus soil viable.*

INTRODUCTION

Soil is one of the most important natural resources, wherein, together with water, air and organisms, it represents ecosystem. Soil is nonrenewable natural resource. It is used from aspects of ecological and technical functions. The world understands more about possibilities and conditions of so called, sustainable soil development. This leads to questioning on how to preserve fertility and productivity of soil in regard to its usage from the aspects of ecological and technical functions. In conditions of faster growth of population, demand for food and raw materials is considerably increasing, so how are we going to harmonize these two opposite functions, and how are we to protect the soil from high exploitation for the benefit of technical functions of the soil. World population today, in the year 2006., is 6.5 billion, in the year 2010. it will be 7 billion, in 2015. it will be 8 billion, in 2050. it will be 10 billion, thus question is being asked, how is it possible to preserve soil and improve production when the number of population increases. **(Lal, 2006)**. **Varallay (2006)** points out that the most important criteria for biological life are: healthy and good quality food, safe food, safe water and pleasant environment. They are closely related to different ways of usage of soil areas, sustainable management of soil resources. As it is pointed out by **Nieder (2006)** – soil is live organism, biologically active porous and structural medium on the Earth's surface, which came into existence from mineral and organic matter of water, air and live organisms. Soil is of fundamental importance for consumption of carbon, nitrogen, and determines the flow of



water to the underground waters or its inflow into rivers and lakes. Soil is also a habitat of geneous matter, and serves as a base for many different activities.

Due to mans influence, the tendencies of transformation of natural soils into anthropogenic entities, are more and more obvious. Because of these reasons, natural properties of soil have been completely changed, that is its physical, biological and chemical properties. Today, these soils, in classification system, are marked as **anthropogenic** units. Through these processes were formed the creations using different measures which are labelled as meliorativ measures. On the other side, the usage of soil is intensified from the aspects of its technical functions. This process, in some cases, leads to complete disappearance of soil as natural body. In these conditions, term «sustainable soil development» is more frequently mantioned. Problems have arroused to such dimensions, that it led to need for better approach to these problems, and more complete defintions, which would correspond to real understanding in a better way.

In this work we examine the following problems:

- ecological and technical functions of soil
- Syndrome of soil damaged I,
- creation of new soils, so called Technogeneus soils,
- sustainable soil development – myth and reality,
- possibilities of harmonization of ecological and technical soil functions
- measures for soil protection.

1. Significance and principles of soil categorization in respect to ecological and technical functions

With an aim of better approach and understanding of problems which occur under different influences on properties of soil, and by so on improvement of measures of its protection, categorization by ecological and technical functions of the soil is more and more present.

Ecological functions of soil mark the ability of soil to supply the plants with nutrition, water and air, and also soil serves to anchor root system. Besides this, soil is habitat of vast number of organisms (micro and macro). **Technical function of soil** – represent usage of soil outside of sphere of ecological functions. This includes: building of settlements, industry, roads, waste disposal, surface exploitation of different raw materials (coal, bauxite, and other), and other.

Both of these functions reflect on the same soil space, so the crucial questions is the possibility of finding favorable relationship, that is harmonizing these two.



2. The reasons and consequences of numerous soil damages – soil damage Syndrome

Because of different ways of using it, soil is influenced by various processes, wherein four basic groups can be formed:

- soil infection
- chemical contamination
- anthropogenic degradation
- physical destruction

Infection and chemical contamination of soil are not visible, and only by laboratory analysis can their effects be determined.

Infection of soil marks one aspect of soil contamination under the influence of parasites, viruses, bacteria. This process is in progress where numerous unfavorable effects on health of people occur. These processes are especially expressed in city parks, playgrounds, and they are a result of large number of dogs and cats. Also, recovery of communal waste depot and usage of these areas in agriculture can cause infections and various diseases in humans and animals. Today, often are issued warnings that even manure can cause infections and their consequences.

Chemical **contamination** is caused as a result of input of various damaging materials into the soil, mineral and organic. Today, warnings are issued on presence of heavy metals and organic pollutants.

Anthropogenic degradation of soil is a result of unfavorable soil usage under the influence of man. Those are the measures that are used in regular soil cultivation. Consequences are manifested in the following ways: deterioration of structure, soil compaction, reduction of waterpermeability, soil sinking, surface erosion and other.

Soil Destruction – or physical soil damaging lead to its total destruction. Consequences can be of temporary or permanent character. These especially include: settlement building, factories, different waste depots, exploitation of different raw materials, roads, and other.

3. Technology development and creation of new soils – Technogenous soils

In accordance to its origin and usage soils can be categorized into three special groups:

- natural soils
- anthropogenic soils
- technogeneus soils

Natural soils are the soils which have had their original natural properties changed only slightly, thus where the influence of man was very small, e.g. forest soils.



Anthropogenic soils are soils which have, more or less, changed their natural properties under the anthropogenic influence, and especially their fertility. These include soils where all kinds of ameliorative measures were undertaken, such as: drainage, irrigation, rigolation, fertilization and other. All these changes are occurring in situ.

Technogeneus soils are consequence of very drastic changes in soil, wherein certain cases soil completely loses its natural properties. In recent classifications of soils, these soils are sorted into special group – class, as technogeneus soils. The following are special pedosystematic units: deposol, recultisol, pyrosol, garbisol, necrosol, urbisol.

Soils in these areas are in very chaotic state, whose relief is characterized by the presence of various depots, large craters, and often are called as technogeneus deserts.

Damage of these soils is a special problem in their research, and are often scattered across wide areas, and their mapping requires specific way of work. These include special methods for their morphological description, taking of representative samples of “soil”, and special method of laboratory research. Mapping is to be done in high proportions (1:10.000, 1:5.000, or even higher). Unfortunately this kind of research is still not preformed on proper scale.

4. Sustainable soil development – myth and reality

The term “sustainable soil development” is often used in literature. Comparisons with organisms, water and air are often made. However, regarding the soil, question is asked, as pointed out by White (2005), wouldn't the term *v i a b l e* be more appropriate. In fact, in these examinations, soil is behaving completely different. Aim is not to preserve its natural properties in all cases; such is the case with e.g. organisms. This especially applies to soils which are categorized by low fertility, that is, unfavorable physical and chemical properties, especially low depth, large presence of skeletons, and from the aspect of fertility these soils are unfavorable to plants. In these cases, we are unable to speak of protection of status quo from the aspect of its development. These soils, with unfavorable properties, and their usage for the benefit of man, need to undergo very important questioning when choosing which measures to apply for the recovery of unfavorable properties with an aim of improving and enhancing its fertility. This development is to be followed with appliance of such measures which would constantly lead to improvement of its properties. Of course, these include protection of soil from process of infection and contamination. Every soil must be in good state of health, and it must secure regular high productivity.

5. Possibilities of harmonization of ecological and technical functions of soil

With an aim of better soil protection from different kinds of damages and preservation of its fertility and favorable state of health, question arises about the possibility of soil protection from different kinds of its damages, that is, is it possible to bring into harmony its two basic functions.

We should immediately acknowledge that complete measures of soil protection are not possible, but there exists whole array of relative measures, which are able to abate consequences of soil damage.



In complexity of these measures, as important ones, we point out the following:

- Availability of bonitet maps in larger scale and particularly sorting out high quality soils (I, II, III bonitet) from all changes of their allocation,
- Soils which are under influence of e.g. excessive water, such as the soils under influence of overflow (fluvisol), or under influence of stagnating surface water (stagnic luvisol), or underground waters (eugleys), it is necessary to protect these soils from this aroused excessive water (drainage, mounds),
- While usage of soil on sloped terrain, if the slope exceeds more than 15 °, it is necessary to change allocation of growing cultures (maize, potato), and instead of them impose grassland,
- Sanitation of chemical properties of soil is one of the important measures with the objective to acidic reactions as well as alkali reaction. In these conditions liming are applied,
- On soils which came into existence by exploitation of various raw materials, it is necessary to perform reclamation measures, which include: backfilling of craters, leveling of surfaces, fertilization, and other,
- In cases of sanitation of various waste, especially when its case of communal and industrial waste, it is necessary to depose layer of natural soil or convenient roofing material (particularly marl material). For sanitation of communal waste (dumps), special care should be dedicated to possible infection processes.
- As a special measure, the so called soil protection Law should be issued, which would include all soil resources (agricultural and forest), and their usage and protection.

6. Soil protection measures

With an aim of soil protection from various kinds of damages it is necessary to implement whole array of different measures. Primary aim is to preserve high quality soils from damages and destruction. These measures can be categorized in the following way:

- measures in regular plant production, so called Regular agrotechnics
- ameliorative measures for sanitation of different unfavorable soil properties
- measures for decontamination, that is remediation of soil,
- measures of reclamation in conditions when the process of physical damage has began, or process of physical destruction,
- reclamation of communal and industrial waste,
- law regulations,
- all these measures have prerequisite of access to corresponding pedological and bonitet maps.



Measures in regular plant production

As a result of continues usage of arable areas in regular plant production, changes occur in properties of soil. Consequences are especially visible in decreased content of humus, increased acidity, and deterioration of physical properties such as: structural degradation, soil compaction, decreased waterpermeability, water erosion.

In general, fertility of soil is reduced. Necessary measures are: increased content of organic matter (compost, green fertilizers), liming (for acidic soils), plastering (for salted soils), and dissipation of soil.

Ameliorative measures

These measures are a result of when major changes occur in properties of soil when intensive agricultural production is taking place. E.g. in conditions of excess water, especially stagnating surface water; drainage is used as a measure of repair. Also in conditions of soil cultivation on inclined surfaces, the processes of erosion develop. Amelioration of these kinds of surfaces is done by terracing and contour cultivation.

Measures for soil decontamination

In cases of soil contamination by heavy metals and organic pollutants, it is necessary to apply measures of decontamination that is remediation. In these conditions, especially useful effect gives measure of liming.

Reclamation measures

In conditions of physical damage of soil (destruction), when soil loses all of its natural properties, it is necessary to implement reclamation measures. These measures are performed in several stages: technical, agrotechnical and biological phase. Aim is to once again bring soil areas for plant production.

Reclamation of communal and industrial depots

With high growth of technology, industry, and especially rise in number of world population has led to accumulation of vast amounts of waste, especially communal and industrial. These depots can not be directly used in plant production. Their reclamation requires deposal of suitable layer of natural soil depots or roofing material of suitable properties (e.g. loess, marl material and other.).



Law regulations in relation to soil protection

Special aspect of soil usage and protection is existence of appropriate laws and regulations. In most cases these issues are included in different laws, such as: Agricultural soil law, Town and country planning law, Mining Law, and others.

We deem necessary – that it would be of great significance for all the main issues to be included in unique Law which would comprise all soil resources (agricultural and forest). Some countries have already done so (Germany, Switzerland). This law would ensure better care and preservation of soil.

As **Nortcliff (2006)** states, work should be stepped up in making of other legal documentations, such as:

- Thematic Strategy for Soil Protection
- Soil Action Plan
- International Convention for Soil Protection.

CONCLUSIONS

In this paper with discussed problems related to different aspects of soil damages and protection, is in progress. It's emphasized that the soil is used on multifunctional basis, and its use is based from aspects of ecological and technical functions. Soil undergoes all kinds of damages wherein exists so called damage Syndrome which includes: infections – chemical contamination, anthropogenic degradation – physical destruction.

As a distinct problem are the specific soil formations, so called Technogeneus soils. These soils differ from anthropogenic soils by their origin and properties. Work also provides measures for different aspects of damage. It's especially emphasized a need for adoption of specific specific Law for soil usage and protection.

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PROBLEM NATURAL AND MAN-MADE DISASTERS ON REGIONAL AND GLOBAL SCALES

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With the development and complication of our present civilization, the growth of the size and density of the population on the Earth and, as a consequence, the expansion of developed territories, has increased the number and scales of technogenic catastrophes. Nature also responds with a growth of catastrophes, which seriously damage the economic and social development of humankind. Damage from natural and man-made disasters is well known. From the data of the German insurance company "Munich Re", the 1990s were record years for amounts of natural hazards leading to losses of tens of thousands of lives. In 1999, 700 natural catastrophes took the lives of more than 70,000 people. The economic losses from natural cataclysms for the last 10 years constituted US\$535 billion, of which US\$160 billion were attributed to 1996 and almost US\$80 billion to 1995.

In the developing countries where the population and territorial expansion grows especially rapidly, relative losses in gross domestic product (GDP) due to natural catastrophes are much greater than in the developed countries, and the absolute amount of victims is always higher.

Natural disasters, in contrast to man-made catastrophes, are more rare but they have a powerful destructive effect and often cover large territories. The developing countries suffer from them most often. They have neither sufficient information nor methods to predict such events, a lack of estimates and methods to control these risks, poor governmental structures to respond to and resolve the consequences of natural catastrophes, and poor knowledge of insurance and legal spheres useful to solve such problems.

The paper discusses the issues related to the influence of natural and man-made disasters on sustainable development of cities and settlements. Evident increases recently observed in the levels and scale of danger and losses inflicted by hazardous processes require both explanations and implementation of a package of urgent managerial, scientific, administrative, design, and construction measures.

We understand the issues related to the sustainable development of settlements as data-supported implementation of a scheduled status for a 'society and nature' type complex social and economic system where sustainability may be simultaneously ensured for: a) biosphere; and b) technological and economic resources and characteristics of the system providing high quality of life with regard to continuous social development. The contradictory and complicated nature of such task has primarily to do with the fact that improved social and economic status of communities achieved through intensive development may increase danger levels for human health and environmental pollution, which could be extremely harmful in any complicated natural environment. Any decrease in the information support provided for urban development may have particularly negative consequences.



Among the factors behind deteriorating quality and scope of economic and environmental information used to support sustainable development of cities the following may be listed:

- highly acute contradictions between bureaucratic interests, on the one hand, and social and community interests, on the other hand, which manifest, among other things, in attempts to limit or conceal information;
- inconsistency between environmental status of territories and needs of society, especially in matters of compliance with hygiene and sanitary standards and indicators;
- low environmental culture and social responsibility of officials and population, deteriorating public mental health;
- extreme emphasis placed on attainment of universal environmental well-being and finding solution to issues of biosphere protection, a sort of ‘ecoism’ manifested in actions of ‘environmental blackmail’ or unmotivated ‘environmental disobedience’ typical of certain Greenpeace activists or shirt-sleeve antiglobalists, etc.;
- crisis of central, regional, and municipal authorities, their peculiar ‘inferiority complex’ as regards urban problems, which is most obvious in hasty approvals and cancellations of resolutions in matters related to urban or infrastructural planning, development and operation;
- insufficiently developed methodology, subjectivity and favouritism in environmental impact assessments, which often results in approvals of ill-considered solutions and in additional subsequent ecological damage or, on the contrary, in attempts to defeat advanced projects;
- absence of any arranged information base that might provide a framework for economic, ecological, and social predictive and diagnostic activities.

The absence of the required information base results in higher developmental risks, while risks of urban operation and development in complex environmental conditions increase due to more uncertain developmental alternatives:

- limited spatial, material, financial, and human resources are manifested stronger than under ‘normal’ circumstances;
- the impossibility to deliver univocal forecasts for consequences of interaction between technosphere and nature, as well as between objects of technosphere via natural substrate is becoming more obvious;
- social depression or, on the contrary, aggression of decision-makers are increasingly noticeable (hence unfair competition, corruption in municipal and associated authorities, distorted information, etc.);
- imbalances between numerous units of municipal mechanism, including planning, pricing, logistics, finance and credit relations, etc.

Loss of life and property from natural disasters has been huge, while even greater potential for more casualties exists both in Russia and in any other part of the world. It is obviously in public’s best interests to diminish this impact and to develop such human communities that would be more resistant to natural catastrophes. This could be achieved by implementing thorough and permanent measures that might include risk reduction, readiness, responses to emergencies, and recovery following any emergencies. Implementation of such measures, particularly in view of limited resources and competitive priorities, requires accurate information delivered duly and promptly in order to facilitate the process of making reasonable decisions.



The disaster information base should include the following:

- improved database searching techniques, e. g. by such criteria as regions or any given type of hazards;
- techniques for defining data sources, quality, and reliability, as well as data compatibility standards;
- systems or software to provide fast data integration for the purpose of producing and delivering data adjusted for needs of decision-makers and for each specific task;
- educational programmes for users;
- international, national, regional, and local maps showing space-time variability of hazards and risks;
- probability assessment for dangerous phenomena;
- assessments and examples of potential impact, incl. structural impacts;
- real-time display of unfolding events;

The economic consequences of natural hazards depend on the type of natural process, the size of the damaged territories, the structure of economic development and present economic situation in the region, and, finally, population density.

Different causes of the origin of dangerous natural processes taking the form of catastrophes and leading to emergency situations can be identified. First of all, these are natural causes connected with the geological and geophysical processes in the Earth's crust as well as processes in the atmosphere and in the World Ocean. They are of stochastic character with aperiodic changes of their frequency of occurrence and intensity. The effect of cosmic factors (solar activity, parade of planets, etc.) is actively discussed. Therefore, it is difficult or even impossible to predict dangerous natural processes, but methods of their reference to certain territories can often be found.

For a long time, Russia has been intensively developing due to gaining mastery over new territories and new resources, even over those territories where there is a likelihood of increased frequency of occurrence of dangerous natural processes. At present the average multiyear damage from dangerous natural processes in Russia constitutes 7-10% of GDP each year. It should be noted that damage connected with social losses (expenditures on recovering health, reconstruction of dwellings, work, and the psychological cost of despair) is excluded from this estimate, although those are the main criteria of human life. Also, no account is taken of the losses connected with economic activity within the damaged region, its budget, and investment policy.



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THE RISK-SOCIETY; “THE EFFECTS OF NATURAL AND MAN-MADE DISASTERS ON URBAN PEOPLE AND URBAN SOCIETY”, THE EXPERIENCE OF THE 1999 MARMARA EARTHQUAKE

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This study examines the psychological effects of natural and man-made disasters created not only society but also individuals after having defined the Risk- Society. The Risk-Society describes the development process that is inevitable and produced by industry-society within itself which appears on the progressive process of the industry-society. The Risk-Society brings not only hazards and risks that they are not familiar with and have not faced before but the prosperity and favors for the Risk-Society as well. Natural and man-made disasters affect the human beings more than they have not faced before the eras of the history of human and show impacts and changes of psychological structure of urban society after disasters.

The study examines psycho-social works that are carried out locally after disaster and the effects of the 1999 Marmara earthquake on the region is taken up as the example of The Risk-Society . Visual and written media, the reports of official institutions and the personal observations of the staff that work in disaster region are evaluated as the main datas.

The study has found out that in The Risk-Society, urban people are influenced by natural and man made disasters not only physicaly but also psychologically. The psycho-social troubles and impacts that have not seen before The Risk-Society appear in different qualities in developed urban societies after disaster. The approaches of The Risk-Society that carry the features of them on the natural and man-made should be different to classical systems. The steps for the preparednes of disasters and disaster managment plans should be carried out by estimating the risk types that modern people will face.

Key words: *Risk, Risk Society, Disasters, Urban Society.*



I-RISK AND RISK SOCIETY

A-Risk Concept

Risk concept is examined and interpreted in different ways. Primarily “risk and risk society” concept is used by Antony Giddens and Ulrich Beck in the field of social sciences, commonly used in finance and management disciplines.

“The word “risk” is being used to express “hoisting sail beneath unknown seas”, originated from Spanish or Portuguese. In another word, etymologically it describes place sense. Then it is moved to time zone with an interpretation reflecting the possible outcomes of the investment decisions of advancers and debtors after moving into the banking and investment field and gained a wide scope including the other uncertain situations at the end of a definite process” (Giddens 2000, 36).

Ulrich Beck, analysing the risk and risk society concept widely, used risk and danger concepts in the same meaning. While risk concept is used for client relations in the economy and medical world, in sports it is used for extreme sports. The risk concept, as facing the threats of modernity process systematically, is described by Beck in view of risk and danger being an output of modernization (Beck 1992, 21).

Another author Frank Furedi who defined risk concept, after examining the quality and size of the risk concept, emphasize the relation between risk and humanlife.

“Risk term express the probability of occurrence of damage, injury, death and some other negations related with an expected danger. And danger is defined as threats to humanbeings and their valuable ownings” (Furedi 2001, 43).

The definition given by Furedi differs risk and danger as an available threat and possible threat and tells us the difficulty of separating these concepts from each other.

According to Furedi risk concept can be understandable in case of being under risk and “under risk” concept is a new and proper usage. People, under risk, might struggle with outer dangers and all dangers are independent from performer (Furedi 2001, 43-46).

“Risk as an autonomous subject means availability independent from the act and performer. In this case the duty of society is to inform all members for whole dangers which they have to live with. Being under risk is an obligation of life” (Furedi 2001, 45-46).

Risk is observed with danger during natural disasters and become more important, if dangers turn to disasters and risk occurs. Appearance of mechanism which forces society or social life or availability of the probability of this mechanism for certain time and place have an importance for the evaluation of risk (Torrence and Grattan 2002, 6).

Modern society is not ready for dangers which are results of encountered risks and disasters. The opportunities and well-fair, sustained by modernity, make people senseless and familiar to risks.



“Research has shown that people are typically unaware of all the risks and choices they face. They plan only for the immediate future, overestimate their ability to cope when disaster strikes, and rely heavily on emergency relief.” (Mileti 1999, 6)

B-Risk Society

After industrial society, some scientists used “risk society” concept to express the modern society. Ulrich Beck is the most famous author who tries to analyze and offers “risk society” concept. Ulrich Beck describes and assumes “risk society” as a next step of industrial society. Beck asserted everyone who conceives of modernization as a renewing process, must count on even modernity (industrial society) becoming obsolete. Renewing of industrial society is a part expiration process and this process will also cause to emergence of The Risk Society (Beck 1999, 33).

“This concept designates a developmental phase of modern society in which the social, political, economic and individual risks increasingly tend to escape the institutions for monitoring and protection in industrial society” (Beck, Giddens and Lash 1994, 5).

While Beck was separating the industrial society and risk society, he asserted that, the latter step of industrial society, risk society gets its dynamics from industrial society again.

“This transition (process) holds relationship between ownership and rulership same. Industrial society think itself reformed into risk society..

On one side, society gives its decision and takes action according to the pattern of the old industrial society, on the other side the interest organizations, the judicial system and politics are clouded over by debates and conflicts that stem from the dynamism of risk society” (Beck 1999, 34).

“Ulrich Beck may well be prescient in his prediction that the hallmark of the future will be the “risk society,” in which social processes centre on the allocation and avoidance of risk rather than on the distribution of wealth” (Kasperson and Kasperson 2001, 5).

Beck acknowledges the risk society term, has conceptualized the relation between reflex and thought, it meant a way of modernity where the threats created by industrial society, the question about how modernity will restrict itself. Modern societies have to struggle with restrictions, created by own models, unless they start to think their positions, renewing and having a stable industrial policy.

“Today, people have not been transferred to the world of Industrial Society by sorting out the guarantees that are given religious transcendent, feudal classes. Now, having been sorted out from the Industrial Society, they are being thrown to the tornado of world risk society. People are expected to bear to personal and global risks that are quite different and have contradictions to each other.” (Beck 1999, 36-37)

Giddens expressed that globalization effects our life none recoverably and forces it to live with risks and transfers risk society up to today. Giddens implies the pros and cons of risk and tells that risk society is ready for improvements and renewing, and the basic trigger mechanism is risk itself (Giddens 2000, 38). In view of this approach, Giddens analyzes “Risk” and “Risk Society” concepts and explains them as a positive power for modern global societies (Giddens 2000, 48).



C- Risk Types

Antony Giddens classifies the risk types in two main classes. These are;

a- External Risks: Have external sources and comes from traditions or stabilities of nature. Humanbeings come across with this type for such a long time, so they get used to and it became a well-known type.

b- Produced Risks: They are risks which produced because of the effects of our improving knowledge's on earth. For example, global warming is inside the environmental risk category and these kind of risks directly effected by globalization.

"Man-made risk is in the influence with the knowledge creators. In other words, the dimensions and controls of the man-made risk are one inside the other with the level of person who has created the knowledge." (Caner 2004, 4)

Antony Giddens tells that today outer risks cannot be continuous lonely and the natural cannot be completely natural while it can be converted to produced risk.

"In 1998, there was a big flood disaster that caused many people to die in China. Overflowing of big rivers on their banks are the events that are continuous reiterations in

Chinese history. But, the floods occurred in 1998 were not the same as the ones occurred before. Probably, global climate changing has an influence on this incident. It appears that there are some unusual features which cause us to think that the reasons of these floods are not completely natural"(Giddens 2000, 41).

1. External Risk Types:

Some external risk samples which are risk types sourced from constancy of nature or long historical traditions of human being. Some of them are given below:

- Big water floods and deluges,
- Big fires (forest fires),
- Earthquakes,
- Tsunami,
- Landslides,
- Big taifuns and tornados,
- Intensive snow rains and avalanches (Mitchell and Thomas 2001, 77-112).

2. Produced Risk Types:

We already explained the risk types, sourced from the nature's profile and human traditions. Addition to them, there is some risk types caused because of improvement of human beings and increasing of knowledge. In modern industrial society, improvement of industrialization and urbanization jointly and compact, effects the nature and cause new threats and dangers. Some of them are as follows;

- Risks related with global warming,
- Global water-floods,
- Threats of tsunamis to residential areas,
- Massive immigration events (because of wars or political reasons),
- Environmental refuging,
- Global epidemics.



3. Environmental Risk Types and Disaster Samples as Produced Risk Types:

Two main risk types, mentioned above, are related to some risks in human life and could have destructive effect to environment, and move risks into threat and danger category. We enumerate some environmental risk types as,

Nuclear power reactor accidents,

Big petroleum and natural gas leakages, and industrial fires caused by them,

Big chemical substance leakage,

Pollutives to atmosphere,

Environmental risk types caused by natural disasters; Earthquakes, tsunamis, taifuns, tornados, volcanic activities.

II. THE NEGATIVE EFFECTS OF THE NATURAL DISASTER TOOK PLACE ON AUGUST 17, 1999 ON THE YALOVA COMMUNITY

An extremely serious earthquake had hit Marmara Region on August 17, 1999. The quake was 7.4 by Richter scale. It took 45 seconds only. The quake was small in time but left long lasting effects causing both material and moral casualties, losses and damages besides the extraordinary negative impacts on the lives of the area dwellers.*

The most destructive and permanent impacts left by the quake over the entire zone were touched mainly in Adapazarı, Gölcük, Düzce and Yalova, which took the heaviest strike. Yalova the city center with its population of 70.000 people and the whole province with 150.000 people were severely affected by the disaster. And due to the fact that it was a high season of tourism, people who used to come to their summerhouses made the figure of those affected by the quake to become between 250.000-300.000 people.

In this section of our study, we will handle and analyze the negative effects brought by the August 17, 1999 disaster in Yalova.

* According to the official records 17.480 and some estimations say about 30.000 people died, 44.000 people were wounded; 329.216 buildings sustained damages and 97.000 houses out of these got destroyed. Industrial plants and facilities and infrastructures got damaged in serious degrees and industrial events that could cause environmental catastrophe took place (such as TÜPRAŞ fire and AKSA events). According to some estimations, the economic damage brought by this quake was about 10-12 \$billion, which badly affected the Turkish economy in the fiscal years 1999 – 2000.

** The figures established by Damage Determination Teams delegated by the Ministry of Public Works, Directorate General for Disaster Affairs and the Provincial Crisis Center of Yalova are as given below:



A. Effects on the City and Urban Place

Yalova is a city just undergoing urbanization, receiving massive population migrations from the other cities and a city lodging the population surging to spend holiday. Formerly, while the town was a tourism area, recently, it has become an urban center where housing blocks are built intensively for settlement purposes. Accommodating a population of 100.000 people throughout the whole year, this figure goes up to reach 250.000 - 300.000 people during tourism peak season.

The August 17, 1999 quake affected an area of 100.000 houses within this urban place. The post-disaster studies carried out** provided the following figures for the effects left by the disaster on the residence stock:

a. Buildings sustained damages (based on number of apartments)

Residences sustained minor damages: 12.878

Residences sustained middle damages: 15.237

Residences sustained major damages: 13.393

Total of damaged residences damaged: 42.054

b. Damage free residences: 52.946

c. Total residences: 95.000

d. Proportion of damaged residences
to the entire number of residences: 44.267%

Once the given figures are examined, it could easily be seen that about 100.000 residences within the urban area, in which the people of the city will occupy, are all affected by the earthquake and they had to resist an extraordinarily strong energy that eventually caused the residences sustained damages of various degrees, i.e. we cannot say these residences are as strong, new and safe as they were first constructed since the time they took that severe seismic impact that hit them in the base and as if nothing had happened to them at all.

In the Yalova quake of August 17, 14.000 residences collapsed down right away by the quake impact or were destroyed on post-calamity destruction operations as those residences took unrecoverable serious damages. About 15.000 residences received physical damages.

Seven thousand of these were repaired (reinforced) and put on use as the damages they sustained were of recoverable quality, whereas 12.000 residences had repairable minor damages, which were repaired and presented to the urban use.

In this case, 42.000 residences out of the 100.000 urban residence stocks Yalova has, standing for about 45% were affected by the calamity in various degrees and considered the loss of the urban area. The remaining 53.000 residences are reported –as technical reports say- to have survived from sustaining permanent effects.



B. Impacts left on the Economic and Commercial Life, Social and Cultural Life and Educational System

The August 17th quake seriously affected the economic and commercial life of Yalova and let the town undergo unnatural changes. The natural reflection of this did affect the social life of the city dwellers.

a. Effects on Economic and Commercial Life:

The commercial effect of the quake emerged in the most serious way as the businesses and workplaces were destroyed and consequently closed due to the economic stagnation. Below is a statistic showing the workplaces affected by the disaster:

a. Workplaces sustained damages

Workplaces sustained minor damages: 1.885

Workplaces sustained middle damages: 1.151

Workplaces sustained major damages: 751

Total of damaged workplaces damaged: 3.793

b. Damage free workplaces: 3.212

c. Total workplaces: 7.005

d. Proportion of damaged workplaces
to the entire number of workplaces: 54.147%

Once these figures are examined, we will find out that 3.793 workplaces were affected by the disaster. 751 out of these were demolished, 1.151 of them received medial damages (1.121 of these were rehabilitated); 1.885 workplaces got minor damages, restored and made ready for use within a short time. 3.212 workplaces remained harmless. Therefore we can say that 54% of the total workplaces of the entire province was physically affected and damaged.

Due to the destructive effects generated by the disaster, the economy of Yalova was affected negatively. Yalova is not a city with intensive industrial or a production activity; it is an area where service trade and services are active. This is why it was affected in the economic field due to the losses and damages in the population and tourism potentials. Moreover, because of the losses in the target customers' audience, the city witnessed workplaces close-ups and huge numbers of people remaining out of work.*

* Datas taken from The Province Administration of Industry and Commerce, Yalova Chamber of Commerce by the year 2001.



b. Impacts on Social and Cultural Life

The negative effects of the disaster did not emerge in the economic and business life only it had adverse and unfavorable effects on both social and cultural life of the area inhabitants.

Firstly the social structure of the province underwent unfavorable effects. The urban area that was harboring a potential population about 100.000 people broke up hugely. The long lasting togetherness, which used to be seen in the social life and urban neighborhood relationships, also got spoiled. Establishing and developing new neighborhood relations would surely take long time.

Another change in the social texture of the city is the immigration movements lead by those city-dwellers with “city-culture- and high incomes. Part of this section lost its homes, abandoned them and closed up it businesses. The areas and places left by those migrated where occupied by sections of lower social and economic levels. Results of similar nature and direction were obtained in an investigation carried out in Bursa (Bozkurt 1999, 49).

c. Impacts on Educational System

The natural reflection of the losses in social and cultural lives is that the unfavorable effects and outcomes that emerged in the educational system. Approximately half of the teachers (tutors) about (800 people) who came to the city from other areas forsook the city within one year. Some of the private educational institutions were closed and some underwent financial difficulties for not finding the targeted participation by the target audiences. Seven of the public educational institutions existing in the province got demolished, 30 received damages and were rehabilitated or renewed within three months.

The natural conclusion of the losses in the physical structure of education and the dissolution of the educational staff caused obvious decrease in the education quality of the province. This condition could expressly touch in the general exams throughout the country. The average of success of Yalova in the general exams was in the 1st place in 1997 and was around 1st to 3rd place in between 1995-1999. However, those ranks displayed an obvious decrease in the post-quake period after 1999. The rank of Yalova in the general exams started dropping down in the academic year 2000-2001 until it brought the 22nd rank in 2001 and 20th rank in 2001-2002 over the country.

The last words we can say for losses in the economic, commercial, social and educational fields and the re-upturning process is almost the summary of all; no “reconstruction and post-calamity rehabilitation plans-projects” were adopted to cover, to open a horizon for or

demonstrate directing basic data to recover the total area and particularly the badly affected Yalova province. No head office of an institution is even thinking of or pronouncing such a project.



C. The Psycho-Social Effects on the City-Dwelling Population which Sustained Disaster

The psychological effects on the city-dwelling population, who underwent the August 17th quake can be abbreviated as below:

- a. At the time of disaster, the first reaction of the population, which carried the characteristic of nuclear family, who underwent the quake, was fear and shock. The chaos and disorganization that emerged in the social life helped fear acquire permanency.
- b. A short lasting feeling of panic accompanied the shock.
- c. Fury and anger orientation. Sudden and instant fury and anger to those who are thought to be responsible for the risk confronted. This course of conduct was frequently reflected to the visual media.
- d. The roles undertaken by public officers and civil community organization members taking part in the disaster studies were exaggerated and put to admittance. It is further found that the studies carried out by the civil community organizations are highlighted.

III. PSYCHO-SOCIAL SUPPORT SERVICES AND REHABILITATION WORKS CARRIED OUT IN YALOVA

A. Initial Period Works

Limited short term and initial period works were carried out by civil servant and volunteer organizations in Yalova after the natural disaster of August 17, 1999. These works were for very short (around one month) or short term (3-4 months) periods. Psychological supports were given to the disaster stricken people, especially to children, in these works. In this period, psychological support study was carried out to aim at 2000 family who live in the 3 tent town (Çadır kent) builded in the city.

The main theme of the initial period works after the disaster included shock, trauma and phobia situations, and special studies were performed to recover from shock and phobia, and to decrease the effect of trauma situation. For this purposes, evening courses, nursery schools and children intended activities were organized and some individual and group therapy were also performed by psychologist in the tent towns.

This first period works were carried out by using the limited possibilities and the personnel/staff in hand, therefore many failures occurred besides many constructive works discussed above. Especially the lack of the psycho-social support service staff and unawareness of the community from these services were the main problem.



B. Mid and Long-Term Works

For the urban society, who survived the disaster, taking mid and long-term psychological supports and to be able to cope with the risk encountered, turn out to be more important. Mid-term (1-3 year) works were started in order to provide psychological rehabilitation after the disaster. These works were designed jointly by Crisis Centre of Yalova Governorship and civil society organizations. However, these works were executed by some professional and civil society organizations.

Turkish Psychologists Association, Red Cross of Switzerland, AMURT, a civil society organization from Switzerland, Boğaziçi University, and Red Cross of Germany were the most effective organizations in the project carried out in the second year after the disaster.

C. Findings from the Psycho-Social Support and Rehabilitation Works

Determination of the effects of the risk resulted from urban area and rehabilitation of these effects was generally carried out between January 2001 and June 2002. It had taken more than one year after the disaster for starting to the works. Similar works were also performed in the period of just after the disaster. Recovery from the short time initial shock and rehabilitation studies was executed in these works. However, these works were not based on certain findings and were not systematic. Moreover, the chaos and disordered environment in the initial period did not enable these works.

It was seen that the urban populations were psychologically effected and the psychological discomforts were continued after the disaster. 1100 of the people living in the region, where the psychological support works executed, were applied to get that support. This number was more than 20% of the 5000 families living in the prefabricated homes.

Almost all the persons who applied to the psychological support were woman or children. Lack of possibilities to discuss the troubles encountered and spending most of the time at home was the most effective reasons for women in this situation.

The number of the disaster survivals, who applied to the psychological support works and continue to the therapy even 2-3 year after the disaster attracted the attentions.

CONCLUSION

Even though it is not like the same rate in the last 60 years, our country is systematically industrialising, unsystematically and rapidly urbanising, and most of the population (more than 60%) accumulating in the cities. These industrialisation, irregular urbanisation and population accumulation were mainly effects Marmara Region. There were two big city (Bursa and Kocaeli) and hundred thousands residential district that were jointed with İstanbul by the economic, commercial, industrial and education relationship.



Casualties occurred in the urban places and economic life after the disaster brings the district population into face to face with the risk. This fact negatively effected the social and psychological structure of the community and the individuals. In our study, mainly the psychological support and rehabilitation works, those carried out for more than 1.5 year after the disaster, were investigated. Findings from these works showed that there is more risk possibilities to the people living in the urban regions, they are under risk, and they are more defenseless and weak when they come across with the risk. In this social structure the required essential hardware should be prepared and qualified manpower should be trained and ready for such disasters. However, it will not be an exaggeration but pitiful confession to say there was nothing done until we faced August 17, 1999 earthquake. All the same, it is not possible to say there are systematic preparations after that time also.

Almost all the psychological support and rehabilitation works executed in the region, especially in our research area-Yalova, were exposed by the Civil Society Organisations and volunteer enterprises and efforts. The results showed that whether just after or in mid-term after the disaster the society is affected seriously from the risk and undergoes to trauma situation. It is founded that the chronic stress may continue and this stress may turn out to psycomatic troubles in the most of the disaster survivals (especially woman), if the required precautions is not taken.

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SOLID WASTE MANAGEMENT AFTER OCTOBER 2005 EARTHQUAKE IN PAKISTAN

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This paper discusses the issues related to Solid Waste Management in the areas affected by the devastating earthquake in Pakistan in October 2005. The paper mainly focuses on the household solid waste.

The earthquake that hit the Northern Pakistan in October 2005 was indeed one of the worst in the world's history. The total area struck by the earthquake was around 44,000 square kilometers with hundreds of villages only accessed after 2 months of the earthquake. Population loss was estimated to be about 79,000 persons with hundreds of thousands displaced and losing the livelihoods.

Just after the earthquake national and international aid flooded in to the area. Realistically, the first preference under such circumstances is always to save human life and then concern for other issues. Environment is already a very low preference in Pakistan and under such conditions no one could have expected that it would be cared.

The areas affected by the earthquake were remote mountainous ranges with few small cities and mainly towns and villages. The simple living style in the towns and villages was traditional and as a result not much amount of solid waste was being produced before the earthquake. The type of waste produced was also mainly organic that was used as fertiliser or feed for animals. However with aid coming from all corners of the globe, the basic structure of the waste entirely changed. Millions of plastic water bottles reached the area along with the packed food. This produced a different type of waste i.e. recyclables in the area. These recyclables don't go away in nature and they need special care. Although with time, the inflow of these recyclables to area decreased but nature was put under great strain by leaving these recyclables in the area along with some permanent changes in consumption behaviour of people also.

Tonnes of plastic recyclables reached the area but not a single NGO or governmental authority was quick enough to put a recyclables collection and transport system from the area. Author was among the few people advocating for this type of action to protect nature as well as provide income generation activities to the earthquake affected people. Such a system with hiring of earthquake-affected persons from area could have been of great help. However most of the stakeholders including international donors mainly focused on the demolition waste and unfortunately some of them were only trying to sell their crushing machinery!

Key Words: *Earthquake, Solid Waste, Recyclables, Livelihood, NGO, International Donors*



General Humanitarian Situation

The shallow earthquake, about 10 km deep, occurred at 8.50 am on 8th October 2005 and lasted an unusual 6 minutes and 8 seconds. Tremors of intensity of 6 are rated as major earthquakes. This very severe one measured as 7.6 on the Richter scale and proved to be terribly destructive. The epicentre laid some 95 km northeast of Islamabad (the capital city of the country) in Kashmir, very close to Muzzafarabad, the capital of Pakistani-administered Kashmir. The mainly affected areas were those on Sediment-filled valley floors as well as steep hillsides. As it often rains during this season, the potential for landslides, mud slides, and rock fall was also considerable, causing a further blow to the weak infrastructure of an impoverished region. This earthquake was followed by some 40 aftershocks with intensity of 5 to 6 registered on the seismographs within six hours. Since then, more than 1500 aftershocks kept causing panic, fear and further damage, although minor. Earthquakes may still occur in some areas during the following months.

It is estimated that 3-5 million people have been hit adversely by the earthquakes in Azad Kashmir and NWFP. Severe to total damage occurred to about 50% to 90% houses in the affected areas. Death toll due to the devastating earthquake has rose to 79,000 (official figure) to close to 150,000 (un-official figure) and Millions homeless and hundreds of thousands death threatened. The delivery of humanitarian assistance was constricted by the mountainous area, cold weather, and damaged or collapsed infrastructure. The most affected areas were Pakistani-administered Kashmir, and the North West Frontier Province (NWFP) in Pakistan.

Solid Waste Anatomy before the Earthquake

The region was mountainous with remote habitation of people. The earthquake hit area had 3 major cities while all the remaining were only small towns and villages. The people of these areas were living in a closed system with agriculture as main source of income. In Kashmir part another major source for the families was the income coming from relatives working outside the country. Being in isolated and closed system the following was a typical solid waste preview produced in these areas when considered as average for the whole affected region:

- a. Organic waste including animal waste: 80%
- b. Recyclables: 10%
- c. Non-separable waste: 10%

The largest part of the total waste was organic including the animal waste. Being involved in agricultural activities most of the households were practicing husbandry also as an activity. Animals were kept along the residential block and were fed by grass and also food waste. The organic waste excluding animal waste was mainly vegetables and fruit wastes with very small part of cooked food waste uncommon to the practice in most of the cities in Pakistan where the cooked food waste makes a considerable part of waste. The low temperatures in these areas allowed people to store the extra food for next meal.



Recyclables constituted a very small part of the total waste (not more than 10%). The recyclables in the country have major part of tetra packs of milk and juices followed by paper. In these areas milk was produced at household level and juice was not a major concern with huge number of fruit trees. Water bottles which are now making another significant part of recyclable waste in the country were alien to these areas. People used to drink from natural springs.

Non-separable waste was the waste with dirt, cloth, and bones which may stick together due to mud. In this case also the bones were then picked up by dogs and consumed.

Waste Management System before the Earthquake

The cities had a waste collection system operated by the municipalities. It was not door-to-door collection but rather transport of waste from secondary collection points to the disposal sites. Due to difficult terrain compact trucks were not used for such a transport but rather open tractor trolleys were used to pick the waste accumulated on road sides and taken out of the city. As far as disposal was concerned it was either wild dumping or burning outside the city. None of these cities had proper landfill for waste dumping. Medical waste was generally incinerated in locally developed kilns.

In small towns and villages the waste was not collected by any authority. The waste produced by scattered producers was either burnt by producers or used as feed for animals. In most of cases the second option was valid.

The recyclables part in cities' waste was recovered partially from the wild dump. There was no organised system in any of these cities or towns by municipalities or private sector to either collect the recyclables separately from source or at any recycling centre. The informal sector busy doing such a job at wild dump was made of children of refugees. Major part of this portion of waste consisting of tetra packs of empty juice and packs of tea. Empty milk packs were still something uncommon due to extensive husbandry activity in the region.

In towns and villages the recyclable part was negligible and it was also mainly paper. The paper was also used to burn fire or place inside houses for different uses. The only considerable recyclables were tin of oil can which was again reused to cover roof or to make rain water collection system. However with increasing population there were signs of increasing amounts of these recyclables in the area



Scenario after the Earthquake

After the earthquake there was a huge population flux from scattered areas to cities (most of them destroyed) to camps. There were two types of effects of the earthquake on the solid waste being generated.

Scattered villages and communities who chose not to leave their places starts receiving aid generally packed in recyclables. The largest part was water bottles as the water resources got damaged and even displaced; the most important need was met by sending the bottled water. These bottles were basic need but they piled up in the region. The nature is unable to handle these recyclables by her and especially when this waste is in large quantity. One can see the plastic bottles, biscuit packs, and polythene bags scattered in the once lush green forests of the area. This waste may stay there for a long time but with rains most of it may flow down to near by rivers and thus pollute another part of the ecosystem.

In the camps established for refugees the situation was not that promising either. The city governments were already not in position to handle previously existing waste with the earthquake destroying the infrastructure and influx of new refugees the problem further increased. Again the recyclables were major part of the total waste but this time other organic waste as well as human excreta also made a substantial part of the total amount. Densely populated camps got flooded with heaps of waste thus not only produced a stagnant smell in the area but also risked the pollution of under ground water. In some cases burning was practiced but it produced air pollution and was also not efficient due to cold and rainy weather.

After a year when these areas were visited the piles of plastic material were seen in the forests and also along some secondary and tertiary road links. Similar to approach of a year ago still no authority was planning to collect these recyclables and on real grounds it was now impossible. The waste has been scattered in a very large area and only community work can help to collect it. Unfortunately community seemed to be busy with its reconstruction work and to large extent careless about the issue.

Change in Long-term Consumption behaviour

Through various meetings with local suppliers and people in the area it was known that the demand for materials with recyclable packing increased 5 folds. Again the main part of this was bottled water. In some cases there was genuine need due to dislocation of water resources but in more than 75% of cases the consumer behaviour was found to be changed. People were now more interested in getting packed material that is easy to handle and use. Just to mention a sweet dish made of rice was prepared at homes utilizing available material at homes but now the use of commercially available prepared materials has increased. These small diversions from conventional way of life seem too small to worry but with time they are putting up piles of waste in the areas.



Role of Stakeholders

In general the producer of waste is considered as most important stakeholder. However under such emergency situation this was not true and should not be expected either. People were not only too much worried about their situation but were also not experienced in handling such type and amounts of waste. It should have been the supplier or donor organizations those must also plan to take care of waste especially related to material they were bringing in. This was easily manageable at refugee camps and much more difficult in scattered areas.

It was observed that donor organizations were not very much caring about this issue. However if one classifies between national and foreign organizations then the foreign organizations were more careful than their local counterparts. Turkish NGOs were leading the way with putting up the whole waste collection system in their camps, schools, hospitals as well as even at the places where they distributed any aid material.

Waste collection was one part of the problem while its disposal was another. Due to destroyed municipal infrastructure (municipalities in that area already had not very good system) the proper disposal was not an easy task. The most viable option was dumping and even burning of non-hazardous waste.

Under such circumstances proper waste transportation to a dump site and its burial was not an easy task but in practical it was not difficult either. With a lot and lot of national NGOs and international organizations in the area bringing in of equipment was also not a difficult option. UNICEF arranged a 2-days workshop about handling of earthquake waste but it was very unfortunate to see that their international experts were just trying to propose small crushers to crush the demolishing waste. Demolishing waste was a critical problem but due to low temperature, less winds and few showers and snow fall it was not to be a hazard. Again it is unfortunate to say that those experts were just promoting 2 multinational producers of crushers.

At one stage the author and some other people had a meeting with some international organizations and proposed that a municipal solid waste collection system should be encouraged. This would not only reduce the waste threat but also provide some livelihood to jobless persons who get involved in the waste collection (mainly of recyclables). There were some positive responses from these organizations but all remained to be moral support only!

Not only waste problem was ignored but also the issue of waste water got neglected especially in the refugee camps. Usually the solid waste was then thrown at such places thus further deteriorating the situation and polluting the under ground water sources. The mixing of waste water and solid waste made it more difficult to handle the waste being more wet and smelling with time.



Conclusion and Recommendations

The areas affected by the earthquake were remote mountainous ranges with few small cities and mainly towns and villages. The simple living style in the towns and villages was traditional and as a result not much amount of solid waste was being produced before the earthquake. The type of waste produced was also mainly organic that was used as fertiliser or feed for animals. However with aid coming from all corners of the globe, the basic structure of the waste entirely changed. Millions of plastic water bottles reached the area along with the packed food. This produced a different type of waste i.e. recyclables in the area. These recyclables don't go away in nature and they need special care. Although with time, the inflow of these recyclables to area decreased but nature was put under great strain by leaving these recyclables in the area along with some permanent changes in consumption behaviour of people also.

Although at time of such devastation no one was expecting the care for garbage or solid waste but unfortunately this issue was neglected. Not only any investment in infrastructure was made but no organization tried to full to inform people about this issue. There were some hygienic awareness programs by some NGOs but none actually helped the people to find way out.

Following are few recommendations made in this regard:

1. The remaining municipal infrastructure after any such disaster should immediately be assessed and strengthened to possible extents.
2. Similarly municipal services expert human resources should be figured out and hired by large organizations to perform the task.
3. People should be informed well about the issue as well as should be equipped to handle the problem.
4. Local youth and other people should be hired and trained to take care of waste in a manner that this becomes their income generating activity.
5. There should be better coordination among all donors and other organizations to take care of waste not only produced by the local population but also due to materials brought in by them.
6. All helping organizations should prefer to bring in material with least possible packaging.



NATURAL OR MANMADE DISASTER? THE CASE OF FLOODS IN MUMBAI CITY

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Mumbai is amongst the 13 mega cities in the world housing a population of about one billion. Regarded as the commercial capital of India, the city was severely flooded in July 2005. A number of environmental concerns (destruction of mangroves, land reclamation and altering the course of the river, sewage draining into rivers and the sea, violations of coastal zone regulations, etc) have been raised over the decades, challenging the development trajectory of the city and the flawed investment patterns.

Mumbai city received 944 mm of rains within 18 hours. The impact of rainfall aggravated by high tide and Mumbai's lifelines were in complete disarray- Expressways and railway tracks completely submerged; traffic was in grid-lock in the entire city. Electricity and communications lines were down. Western and Central Railways could not operate their services. All the flights- national and international - were disrupted. In fact there was a State-wide unprecedented disaster.

About 1,100 deaths were reported and most of the deaths in urban areas due to drowning: Mumbai (447), New Mumbai (66), and Thane (177). In rural areas, most deaths are due to landslides. More than 250 people died of leptospirosis and other diseases.

In the state of Maharashtra 60 percent of total urban population affected and 13 Municipal corporations and 56 Municipal Councils were rain/flood affected. Thane district and Mumbai Municipal Corporation suffered losses of Rs. 581.57 crore and Rs.247.5 crores respectively. Roads running upto 2500 km. worth Rs. 460 crore were damaged. 68 pumping stations and 323 community infrastructures were submerged. It caused extensive damage to public transport, buildings, and schools and to lives and livelihoods of people.

The paper, using this urban disaster as a case in point will focus on issues related to preparedness and standards pertaining to urban planning. The value of early warning, community awareness, and availability of fuel, generators, medicines, boats, buses and trucks will be underscored. Similarly the efficacy of storm-water drains, sewerage lines and enforcement of regulations are vital for disaster prevention.

The paper will present critical reflections on the linkages and challenges in conceptualizing 'natural' and man-made disasters. It will also discuss issues related to prevention and preparedness from both - the perspective of community survival and environmental sustainability.



Introduction

For the first time in the history of human race, with rapid urbanization, more people will live in cities than in the countryside in the year 2007, according to the UN- Habitat Report on State of the World's Cities 2006-7. The study also suggests that globally, slum population will pass the one billion mark in 2007, increasing by 27 million people per year, over the next twenty years. One in three city-dwellers of the world, it is projected, will live in inadequate housing with little or no basic services.

Mumbai is one of the 13 mega cities in the world and houses a population of about 14 million. Regarded as the commercial capital of India, the city was severely flooded on 26th July, 2005. This article begins with a situational description of the city and traces its urbanization and growth trajectory. A number of environmental concerns (destruction of mangroves, land reclamation and altering the course of the river, sewage draining into rivers and the sea, violations of coastal zone regulations, etc) are also raised. Placing the disaster of 26th July within the context of planning or rather the lack of it, and the flawed investment patterns, the article contributes to the debate on conceptualizing disasters as natural or man made. It discusses issues related to prevention and preparedness from both the perspective of community survival and environmental sustainability.

The City

The city of Mumbai (also called Bombay in the past) is located on the west coast of India and is one of the world's most populous metropolitan areas. According to the Census of 2001, the Mumbai Metropolitan Region had a population of 17 million. Of this, slum-dwellers account for 55 per cent or 7 million.

The challenges of urban planning can be gauged from the density of the city. Mumbai houses over 40, 000 people per square kilometer. This is far greater when compared to Seoul's 16,391 and Hong Kong's 6,254. The average density of population in Mumbai is 20,000 to 30,000 people per sq km, and peaks at 45,000-50,000 people per sq km, which is unheard of anywhere else.

Mumbai has long been seen as India's premier metropolis. However, an annual survey of 40 Asian cities by *Asiaweek* ranked Mumbai 33 while Bangalore and Delhi (both in India) stood at 27 and 31, respectively. The survey rated Fukuoka and Tokyo (in Japan) first and second, respectively, for providing top-class quality of life. Of the 27 parameters used to determine quality of life indicators, some of the significant ones were: Average life expectancy, hospital beds per 1,000 people, per capita with a university education, air quality, average monthly rentals, housing prices, existence of a mass transit system, GDP growth.

Mumbai city lies in a zone called the Mumbai Metropolitan Region (MMR) covering an area of 4,355 sq.km. The MMR extends from Colaba in the south to Virar in the north, Kalyan-Bhiwandi in the northeast, Khopoli in the southeast, and Alibaug in the south and has an estimated population of 17 million.



The city confronts several challenges. The last 15 years have seen a migrant population coming into the city at an average rate of 400 families per day. It is also well known that nearly 50 percent of Mumbai's 14 million live in slums. These settlements are often located in areas that are 'dangerous'. For example, about 35,000 slums are on water pipelines and 60,000 on footpaths. Further a local train, which is meant to carry 1,200 passengers, carries 3,500 or more in Mumbai. Similarly, while the capital city of New Delhi has 137 vehicles per km, Mumbai has 696. Per capita open space is a mere 0.5metre per person and continues to shrink. In 1970s it was 2 meters per person.



Historical Growth and Urbanisation

Mumbai was not an indigenous Indian city. It was built by the British to maintain trade links with India and it evolved as a port. Mumbai was never conceived or built in a singular image, with a clear overall design or master plan. Its growth was impulsive and incremental. (Dwivedi and Mehrotra. 1995- Bombay, The Cities Within India Book House Pvt Ltd, Bombay).

The city used to be seven islands. After the 16th century takeover of the islands by the Portuguese, it developed up to the mid 19th century under the East India Company rule. There was physical segregation between the rulers and the ruled. Its evolution is evident as a series of dualities, a phenomenon where many worlds – many ideas and interests – influence its

growth. The bunding of the great breach between Worli and Bombay at Mahalaxmi in the 18th century, together with the completion of the Sion Causeway in 1805 and Colaba causeway in 1838 made available for habitation, large portions of land in the central, northern and southern localities that used to be flooded at high tide. Settlements began to develop over reclaimed higher grounds. The need to link these new satellite townships was addressed by constructing new arterial roads. By mid 1850s Bombay was a mixture of cultures and had acquired a cosmopolitan spirit. During the cotton boom of 1860s, textile mills were set up. The developing thoroughfares, created new opportunities in trade, industry, building and transportation. They also provided the means for northward expansion of the city.

Industrialisation, though lucrative, brought with it the plague and other epidemics. The government was hauled into action and began to evolve a comprehensive scheme of improvement. With the introduction of reinforced concrete (RCC) at the turn of the 20th century, sprawling residential blocks, which came to be known as *chawls*⁵, were built to meet the huge housing requirements of millions of mill workers. Other amenities, like electric trams, telephone and telegraph services, restaurants and hotels, colleges and the university, were all put in place by the 1920s. An important landmark at this time was the introduction of modern English education by Montagu Elphinstone.⁶

Construction activity symbolized the decade from 1933 to 1942 as high-rises began to be built as up-market forms of *chawls*. New lifestyles also became evident through cinema halls and social clubs. In 1967, the idea of a twin city was mooted and the City and Industrial Development Corporation (CIDCO) was set up to build New Bombay.

⁵ The *chawls* were two- and three-storey buildings with undersized single rooms. A group of three or four such buildings accommodated as many as 900 families. These *chawls* became very popular and at one time accounted for as much as 75 per cent of the city's housing stock.

⁶ Montagu Elphinstone introduced higher education despite the weight of opinion in Britain being against educating the "natives." Elphinstone was born on October 6, 1779, in Dumbarton, Dumbartonshire. He entered the Civil Service with the East India Company at Calcutta (now Kolkata) in 1795. In 1801, he escaped the massacre in Benaras by followers of the deposed Nawab of Oudh Wajid Ali Shah. He was transferred to the Diplomatic Service in 1801 and posted to the court of Peshwa Bajirao II. He became Resident at Nagpur in 1804, was sent to the Maratha court at Gwalior in 1807, concluded negotiations with Shah Shuja of Afghanistan about Napoleon's planned advance on India in 1808, and was sent back to the court in Pune in 1811. He defeated the Peshwa in the Battle of Kirkee in November 1817. He became Commissioner of the Deccan in 1818 and was Governor of Bombay from 1819 to 1827. An enlightened man for his times, Elphinstone returned the kingdom of the Raja of Satara and the lands of many landowners and temples. He returned home in 1827, and twice refused the post of Governor General of India, preferring to finish his two-volume work, *History of India* (1841). He died in Surrey on November 20, 1859.



Even as the city expanded north, south Bombay continued to explode. But with a concrete jungle in place, the city began to lose its charm by the 1970s. Haphazard construction with no attention to civic amenities slowly brought the city back to the point from where it started.

According to a geologist H.P. Samant (1996), who conducted an in-depth study, Mumbai is heading for built-up disaster. In 1925, 60 per cent of the city was forest/agricultural land. By 1994, this had shrunk to 30 per cent. Mangrove jungles were reduced from 28 per cent to 18 per cent. In the same period, the built-up area in the city shot up from 12 per cent to 52 per cent. Samant's study highlighted how the six basins of various streams that criss-crossed Mumbai and flowed into four creeks were turned into roads, buildings and slums.

The terrible Tuesday: The event that turned into a disaster

"Terrible Tuesday", "Grey Tuesday", are some of the terms used to describe the major floods that ravaged many parts of the city and crippled it bringing it to a complete halt. Not only Mumbai, but also cities, districts and states all over the nation were affected in one way or another by the deluge of 26/7.

The floods were caused by the eighth heaviest ever recorded 24-hour rainfall figure of 944 mm (37.2 inches). It continued intermittently for the next day. 644 mm (25.4 inches) was received within the 12-hr period between 8am and 8pm on 26th July, 05. Other places were also severely affected - Raigad, Chiplun, Ratnagiri and Kalyan in Maharashtra and the southern state of Goa. At least 1,000 people died.

Human tragedy: The catastrophic floods triggered a cascade of other events like landslides (Sakinaka and areas of Raigad), washing away rail tracks (in Kurla, Sanjaynagar and Mahajanwadi areas). Deaths in the city were due to drowning (233), landslides (120) and stampede (24). At a slum in Vile Parle deaths were caused by a stampede which occurred due to a false tsunami rumor. Residents of low lying coastal areas, who had faced the floods just 48 hours back, panicked and rushed towards higher ground. Several people were trapped in vehicles and 16 deaths occurred from suffocation in cars after water levels rose rapidly, preventing escape. Other deaths were by: electrocution (12), wall collapse (5); water borne diseases & leptospirosis (atleast 25).

Perhaps the worst event in the form of an aftermath of the floods besides the diseases was that of the horrifying stampede at Nehrunagar. It was a product of unwarranted rumours about a tsunami which resulted into a mass frenzy among the residents who panicked and rushed out trying to get away. This stampede left many dead, majority of them were children. This rumour spread to the adjacent "bastis" or settlements. In D.N. nagar, 300 people marched towards the police station claiming that water levels were rising in Juhu. Rumours of dams bursting also spread like wild fire, despite innumerable public announcements regarding their inauthenticity.



Transport and communication: For the first time ever, Mumbai's domestic and international airports (including Chatrapati Shivaji International Airport, Sahar and Juhu aerodrome) were shut for more than 30 hours due to heavy flooding of the runways and extremely poor visibility. Over 700 flights were indefinitely cancelled or delayed. Water flooded the runway on 26th and the instrument landing systems was affected. The air cargo complex at Sahar was inundated and thousands of brand new goods and stationery turned into rubble and scrap. As a result the import firms of Mumbai were also hit. Estimated damage of 100 tonnes of cargo lying inside the warehouse was also reported. The airports reopened on the morning of 28 July 2005.

Similarly rail links were disrupted, and reports indicated cancellation of several long distance trains up to 6th August, 2005. Trains in the local area, all the three major links were severely affected, stranding lakhs of people. Trains could not resume normal functioning even a week or two later, especially in the central lines. This led to a wide spread agitation among working people who were eager to start work as they couldn't afford to take any more leave. Fights among railway authorities and the people broke out in Thane, Ghatkopar, Mumbra and some western regions.

Mumbai-Pune Expressway witnessed a number of landslides and was closed, for the first time ever, for 24 hours. The losses in the transportation sector were estimated as- 52 local trains damaged, 37000 autorickshaws spoilt, 4,000 taxis and 900 BEST buses damaged. During this period nearly 10,000 trucks and tempos grounded.

Telephones lines affected: An unprecedented 5 million mobile and 2.3 million MTNL (state telephone company) landline users were hit for over four hours. Servers in Mumbai had to be reconfigured since they became unoperational. MTNL, BSNL and other mobile companies caved in and people were unable to get in touch with their stranded family members. The MTNL exchange worked on battery back ups and engine alternators. The battery which was taking the load in most of the exchanges, lasted only for a maximum of 8 hours. It was difficult to run the telephone exchange due to non availability of diesel which was difficult to transport as traffic movement had come to a grinding halt.

Water and electricity supply: Water and electricity shortage was experienced in many parts of the city. There was no water available even for drinking. With flood water damaging sewage pipes, water was easily contaminated and rendered unfit for consumption. Black marketing practices were in full swing as people were desperate for potable water. The electric supply in many areas, especially the hard hit areas of Kurla, Kalina, Saki naka was not restored even a week after the deluge. The electricity suppliers defended their actions by saying that flooding would have caused short circuits resulting in electrocution of many. In order to avoid these dangers, they turned off the electric meters to stop supply. Water suppliers on the other hand said that floods had damaged many pipelines and since there was no electricity, pumping stations could not pump water and restore supply. The Bombay Municipal Corporation (BMC) had allocated hard-hit areas with tankers for compensating the water shortage but many residents complained that the water was not fit for consumption.



Many trees were uprooted; around 300 odd trees in the city were destroyed.

Many children dropped out of BMC schools as they lost all their books, uniforms and study materials to the fury of the flood.

Food shortages: The floods also caused shortages of basic items such as vegetables, bread, milk and other items of daily use. Supply of these essential items were hit very badly as trucks could not reach on time because parts of the highways were washed away. Stocks of these items rotted in godowns because of water accumulation. Slum dwellers were severely affected by the food shortage.

In Vithawadi and Shanti nagar in Badlapur, slums were completely washed away. The area was without electricity and water for a long time. The areas received no water purification centres at Barvi barrage etc in Badla pur were not functioning.

The torrential rain brought out the good bad and ugly of the city - it's ancient storm water system, BMC's lack of planning and helplines. However there were also innumerable stories of people reaching out to help in whatever way possible. About 57 villages adjoining the Vihar river were totally wiped out.

The government appointed a committee called Chitale Committee to bring out the causes of the floods in Mumbai and to make recommendations to help prevent such large scale devastation. Some of the major recommendations and their current status are –

- ❖ *Resettlement* - The Committee recommended a resettlement policy wherein people living in flood prone areas should be rehabilitated.

Status -The state does not have the required Rs. 1,500 crores to rehabilitate people.

- ❖ *Reconstruction* - Due to repairs, previously developed properties are now below the road level and prone to flooding. Road widening has led to drains and open spaces being covered, which aggravates flooding.

Status- Nothing has been done to reclaim these ditches.

- ❖ *Mahul-mithi-connect*- Mithi and Mahul were linked at Chunnabhatti, but the width of this has been reduced by 50% from the original 18m. While Mithi is getting more attention, Mahul should not be forgotten, the saddle zone and Mahul creek are natural features to accommodate the Mithi spillover.

Status-Linking Mithi and Mahul is not in the first phase of the plans, says Dr. H. Tondwalkar of Mithi Development and protection.

- ❖ *Stranded vehicles* - To avoid vehicles getting stranded on roads and hindering emergency services , open grounds should be provided for parking

Status -The Joint Traffic Commissioner, Satish Mathur, has written to the BMC asking for permission to use the grounds. BMC has approved this.

- ❖ *Electricity failure* - Electricity meters got submerged and therefore most areas faced a black out. To avoid this meters should be raised above ground level.

Status- Only meters providing electricity to sewage pumping stations are above the flood level.



- ❖ *Zero garbage* - At any given point in time, there should be no garbage accumulation.

Status- This has been implemented.

- ❖ *Mithi river* - It is recommended to remove encroachments and to widen the bed at Mahul Creek as well.

Status- 8 kms of the stretch has been cleared of any encroachments, 5 lakh tonnes of silt has been removed as well.

- ❖ *Hydrological monitoring* – It is recommended to increase the density of rain gauge system to one for every 25 square kilometers.

Status - The plans are on

- ❖ *Topography* - Recommendation to prepare contour maps is vital for watershed management and planning of storm water conveyance is necessary.

Status - Planning is underway.

- ❖ *Disaster management plan* - It is recommended to prepare a well-defined chain of command and controls, to import equipments and to train personnel's.

- ❖ *BMC'S role as a co coordinator* - The BMC should co ordinate between all agencies and the Central Government.

- ❖ *Doppler radar* - it is recommended that Doppler radars which help in detecting clouds and measuring height and extent of rainfall should be installed. Radars will also help to detect turbulence, mesocyclones and tornadoes.

Status- No hopes of installing any Dopplers this monsoon.

- ❖ *Gate at outfalls* - Gates at outfalls are recommended to stop water from entering the city during high tide. Pumps are also to be installed.

Status - New gates have been pending and no pumps have been installed.

- ❖ *Silt traps* - Silt- traps in open areas of river to minimize silt accumulation at closed areas, like the upstream area of the airport runway.

Status-100% silting has been carried out.

- ❖ *Storm water drain* - BRIMSTOWAD was not implemented which dealt with widening of drains . Recommendations of the Nathu committee was also not implemented.

Status - Studies have not reached the concerned offices, so officers and lower functionaries do not know about these recommendations. Many take over 3 years to be implemented.

- ❖ *Society's involvement* - People living in flood risk zones should be informed and asked to take precautionary steps.

Status - No map design of flood risk zones has been made available to public. Work on flood risk index has already begun though.



However it all boils down to 3 important reasons for why the water stayed they are-

Firstly, this was the heaviest downpour in a century. Most of the water emptied into the Mithi which is otherwise a small, dirty nullah. All the water could not be drained into the sea because the sluice gates of the outfalls were shut to prevent water from the sea from coming in during the high tide which coincided with the downpour.

Secondly, areas adjoining Mumbai were already flooded due to heavy rains in Thane, Kalyan, Raigad, and other areas of the Konkan belt. The dams in these areas were also overflowing. Lastly, over the years, intense and indiscriminate urbanization has robbed the city of natural channels for drainage.

The state government has list of responsibilities which are

1. Prepare evacuation plans
2. Resettlement plans
3. Provide holding ponds to retain rain water at critical locations.
4. Improve catchments management
5. Establish river basin council

Disaster Management Plan: The state government put in a comprehensive disaster management plan for Mumbai in 2003. The plan says that the capacity of the storm water drainage needs to be augmented. This is under serious consideration with the state government and the BMC. But the capacity of the storm water drainage has not been increased. The present storm-water drainage system in Mumbai was put in place in the early 20th century and is capable of carrying only 25 millimetres of water per hour which was extremely inadequate on a day when 944 mm of rain fell in the city. The drainage system is also clogged at several places. Only 3 'outfalls' (ways out to the sea) are equipped with floodgates whereas the remaining 102 open directly into the sea. As a result, there is no way to stop the seawater from rushing into the drainage system during high tide.

In 1990, an ambitious plan was drawn to overhaul the city's storm water drainage system which had not been reviewed in over 50 years. A project costing approximately 600 crore rupees was proposed by UK based consultants hired by the Brihanmumbai Municipal Corporation to study the matter. Implementation of the project would have ensured that rainwater did not flood the streets of Mumbai. The project was planned to have been completed by 2002 and aimed to enhance the drainage system through larger diameter storm water drains and pipes, using pumps wherever necessary and removing encroachments. The project, if implemented, would have doubled the storm water carrying capacity to 50 mm per hour. The BMC committee rejected the proposed project on the grounds that it was "too costly".

During the floods of 26th July the 3 lakes in Mumbai - Powai, Vihar and Tulsi were already overflowing and about 7000 people were evacuated from low lying areas in Andheri, Santacruz, Malad, Goregaon, Dahisar and Ghatkopar. Normally the excess rain water is collected in catchment areas and then channeled into the Mithi and Dahisar river. But with massive encroachments and dumping, the Mithi is reduced to a nullah or dirty stream and the Dahisar is in spate, leaving the water nowhere to go except into the low lying or saucer areas, flooding the homes of slum dwellers and other buildings.



Special corridors for BEST buses. The Disaster Plan of Mumbai says “a special corridor for BEST buses must be put in place so that in an emergency all public transport is smooth and people are not left stranded helplessly. Although, there have been sporadic attempts to make out a different lane for buses during peak traffic hours it has not been successful.

Wireless communication: The Plan suggests this “for efficient co ordianting and effective response, communication among line personnels such as BMC, police, fire brigades, municipal and government hospitals, the metereological Departmetn, BEST etc.”

Public information system – The Plan says – “put in place a public address system on trains at various crucial spots in city”. However, there are no public address systems.

All this clearly indicates that very little of the plan has been sincerely implemented.

There are other suggestions such as transforming Mumbai into a union territory. This opinion was voiced because the politicians did not take any responsibility. But implementing such drastic changes for the city does not really seem feasible.

Another interesting suggestion was to establish a citizens committee or a community organization which would take measures to help people and victims of natural disasters. This was expected to be on the lines of the citizen’s forum or peace which committees (Mohalla Samitis) were created to act during communal or racial tensions in different areas. This committee for the floods was expected to take a similar form. Forming citizen based disaster continuity and recovery committee which will make a plan for their localities and test them regularly is certainly required. However they should have the mandate to also guide the work of their local politicians and bureaucrats.

Ideas should also be borrowed from other countries and nations all around the world to tackle disasters. For example, while the Mumbai politicians talk of turning the city into Shanghai, they should also learn a lesson or two from the Chinese disaster management plan. They make use of ships, soldiers, civil defense workers and have clear allocations of responsibilities in the wake of a disaster. London also has a well charted plan to manage disaster which they abbreviate as CHALETS- meaning casualties, hazards, location, emergency, type, safety. They assess and implement the situation making use of this model. Within India states of Gujarat and Orissa have better flood management plans. Nashik was well prepared to face floods and all they did was implement their disaster contingent plan and saved themselves a lot of trouble. Although Mumbai has it’s own plan it was found ineffective or dysfunctional.



Are the floods in Mumbai ‘natural’ or manmade?

Destruction of mangrove eco systems

Mangrove ecosystems which exist along the Mithi River and Mahim Creek are being destroyed and replaced with construction. Hundreds of acres of swamps in Mahim creek have been reclaimed and put to use for construction by builders. These ecosystems serve as a buffer between land and sea. It is estimated that Mumbai has lost about 40% of its mangroves between 1995 and 2005, some to builders and some to encroachment (slums). Sewage and garbage dumps have also destroyed mangroves. The Bandra-Kurla complex in particular was created by replacing such swamps. Mangroves and no development zones work as “dissipation lands” for water percolation. But with builders constructing on these lands this can no longer happen. We were warned about this as long ago as 1999, when a study showed that reclamation at Mahim Bay narrowed its mouth leading to flooding in Sion, Dharavi, and other areas. The reclamation of mangrove land in western suburbs has also blocked the natural drainage system, as discussed before. The mangroves are the city’s sponges and have shrunk from 235 sq.km. in Mumbai and Navi Mumbai to 160 sq.km. All this is a clear cut violation of the 1991 coastal regulation zone (CRZ). The disappearance of these natural sponges was also one of the major reasons for the deluge of 26th July.

Uncontrolled, unplanned development in Northern Suburbs

Unlike South Mumbai, development in northern suburbs of Mumbai is haphazard and buildings are constructed without proper planning. The drainage plans in the northern suburbs is chalked out as and when required in a particular area and not from an overall point of view. The Environment Ministry of the Government of India was informed in the early 1990s that sanctioning the Bandra-Kurla complex (a commercial complex in northern Mumbai) was leading to disaster. No environment clearance is mandatory for large urban construction projects in northern Mumbai. Officials in the environment ministry claimed that it was not

practical to impose new guidelines with retrospective effect "as there are millions of buildings".

To what extent were the floods in Mumbai a natural disaster –is a question that needs a response. Most government agencies argue that the rainfall was unprecedented. The state government has gone on record to say that we have never had 944mm of rain before with a 24-hour period and therefore nothing could have been done to anticipate this kind of rainfall, let alone tackle this problem.

However, in reality, in Thane district, the district Gazetteer mentions rainfall of about 660mm about 50-60 years ago at a particular location. Also, some of the Indian Meteorological Department records from the Konkan region reveal that heavy rainfall of this magnitude is not infrequent. It was because this deluge happened in Mumbai, one of the focal points being the Santa Cruz observatory, that this data has been recorded for the first time. So, it is not as if such heavy rainfall has not occurred before, but that the Meteorological Department may not have adequately reflected it, because a huge city like Mumbai has just two stations for recording data.



The problems lay elsewhere and the disaster brought many of them into sharper focus.

The V.M. Lal Committee was set up under the chairmanship of the then transport commissioner. The committee made 101 recommendations to the high court, of which 20-25 have been implemented. And though we focused on improving vehicular technology, quality of fuel, and other measures in that report, the basic answer lies in improving public transport. All the gains of better technology, better fuel quality, etc are going to be offset by increasing number of vehicles. If we really want to solve the problem of vehicular pollution of Mumbai, we have to look at the Singapore model, where the government has put an absolute cap on the number of vehicles that are allowed to ply at any one point. Even after buying a vehicle, one has to be rich enough to afford a licence plate. Sometimes the licence plate, which is auctioned through a transparent process of online bidding, can cost two or three times the cost of the vehicle. Over and above that, if one enters the CBD during peak hours, one is charged extra. A traffic restraint scheme demands immediate attention in Mumbai if we are serious about curbing vehicular pollution.

Conclusion:

Although set off by natural causes, the Mumbai floods turned into a disaster largely due to humans intervening in the environment. It is evident that the city is sitting on a volcano ready to burst. Unless some of the proposed recommendations are actually implemented, a repetition of 26/7 is inevitable.

The Maharashtra Chief Minister Vilasrao Deshmukh courted controversy when he went on a demolition drive on the basis of a report submitted by the global consulting firm Mc Kinsey, which was asked by Bombay First, a non-governmental organization, to suggest a makeover plan for the city. The government's task force, set up to study the McKinsey report, submitted that Rs. 2,00,000 crore would be needed to turn Mumbai into a world-class city by 2013. Whether the state can afford this cost, especially when it is reeling under a debt of Rs. 1,60,000 crore and preliminary estimates suggest that Mumbai suffered a loss of over Rs. 20,000 crore during the 26/7 deluge, is another matter.

One of the major central efforts in improving infrastructure in our cities is the Jawaharlal Nehru National Urban Renewal Mission (JNNURM). The Rs. 1,26,786 crore plan targets 60 cities, including Mumbai, for a comprehensive makeover.

The JNNURM, perhaps for the first time, despite being a centrally administered project, adopts a decentralized approach, involving the Centre, the states' Urban Local Bodies (ULBs), and financial institutions. It also sets certain conditions, like amending the Rent Control Act, repealing the Urban Land (Ceiling and Regulation) Act (ULCRA), giving financial autonomy to ULBs, and drawing up a viable City Development Plan (CDP), that cities need to fulfill before they become eligible for funds. Mumbai, unfortunately, falls short of precisely these conditions.



Missing out on JNNURM funds would be a huge setback. It would mean that Mumbai's crumbling infrastructure would collapse. For a perspective on the seriousness of the problems facing the city, one has to just look at some of estimates given by the Municipal Corporation of Greater Mumbai (MCGM) and other agencies for civic work. According to the civic body, it would need Rs. 5,000 crores just to reconstruct 500 or so dilapidated buildings in the city over the next 10 years. The MCGM also wants Rs. 3,900 crore for three crucial projects – 1,200 crore to upgrade the drainage system, Rs. 1,200 crore to clean up the Mithi River, and Rs. 1,500 crore to rehabilitate slums situated along the river – if the city is to avoid a repeat of 26/7.

The city faces several dilemmas. While projects like the beautification of Marine Drive, better connectivity to the international airport, construction of 45 more flyovers, and radio-operated air-conditioned taxis are needed if Mumbai is to match global cities, there are basic issues like clean drinking water, a dependable solid waste management system, and affordable housing that require urgent attention.

Some hope is offered by a landmark High Court order in October 2005, saying that all mangrove areas should be identified and notified as forest land and handed over to the forest department for protection. This means that about 30 to 40 sq km of land in Mumbai would forever remain green.

Many large cities and urban habitations are on the coast. Over 25 per cent of India's population lives in coastal areas. Therefore, the need for an integrated and ecologically and socially sustainable coastal zone management system is obvious. The onus must be assumed jointly by government agencies, traditional coastal communities, and environment groups.

Despite the CRZ Notification, its rules are regularly twisted by politicians and builders. Mumbai lies in the CRZ-II zone, which is measured 500m inland from the High Tide Line (HTL). Its aim is to restrict construction activity to curb further growth in density. This zone has a special provision for a buffer wherever there is seawater intrusion through creeks or natural channels. On both sides of such natural channels, a buffer zone measured from the HTL has to be maintained. But politicians and builders calculate the buffer from the Low Tide Line or wherever it suits them. Many argue that strict implementation of the CRZ rules is vital for Mumbai, to check further congestion and consequent destruction by poor planning.

In summary, there is enough evidence to show that the cloud burst over Coastal Maharashtra on 26th July, 2006 would not have turned into Mumbai's worst natural disaster if the city's growth had taken into account the environmental fallouts. Urban planning, as evident from a glance at Mumbai's history, was not given due priority by the authorities. The primary learning is that while natural hazards are certainly not under human control, countries need to take cognizance of the fact that poor disaster preparedness costs urban spaces dearly. The government needs to be much more stringent in monitoring build up areas and carry out extensive environmental impact assessment before sanctioning large scale changes such as fly-overs, reclaiming land, destruction of a mangrove forests and coastal lowlands for urban development. The carrying capacity of the city must be taken into account before going in for large scale or unprecedented growth either in terms of increasing the population pressure or destroying the ecology. Mumbai, as India's commercial capital and one of the largest metropolises of the world needs to wake up to this reality.



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THE THREAT OF THE OIL POLLUTION INCIDENT OCCURRED IN LEBANON TO THE NORTHERN CYPRUS COASTS AND THE IMPORTANCE OF OPERATIONAL SATELLITE MONITORING SYSTEM

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Discharge of oil including with the tanker accidents have the most dangerous and hazardous effects on marine environment. Oil pollution occurred recently in the Lebanon coast is one of the most hazardous threat in the eastern Mediterranean coasts with an estimation of 110,000 barrels. Due to not enough cleaning activities carried on, the oil pollution has spread 100 miles along the coast and effected also to Syria's shoreline. Depending on the wind and current condition, the spilled oil could also be a big threat to other neighbourhood countries such as Turkey, Greece, and Cyprus.

In order to interfere the oil spill, it is important to identify the type, areal extent, position, (nearest ship position if any), the possibility percentage etc. For this purpose, satellite-based oil pollution monitoring systems are being used to take precautions and even to determine the possible polluter. Today, Synthetic Aperture Radar (SAR) satellites are the main data sources to detect the oil spills discharged into the sea with sufficient accuracies.

In this study, Radarsat-1 images covering Turkish and Northern Cyprus coasts acquired by ITU-CSCRS (Istanbul Technical University – Center of Satellite Communication and Remote Sensing) during the event were analyzed using visual and semi-automatic image processing methods. The urgent need for the establishment of an operational satellite-based oil spill monitoring system in the Turkish and Northern Cyprus's territorial waters and the effective role of a ground receiving station at ITU are also outlined.



INTRODUCTION

The increase and development in the marine transportation began to be an important factor for the oil pollution of maritime environment both socially and economically. Oil pollution can effect the environment by many different ways, such as major disasters at sea, and illegal tank cleaning or bilge pumping that has more chronicle results (Bava et.al, 2002; Harahsheh et.al.). In 1954, the first tanker-induced oil pollution was recognized by the International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL). Today, MARPOL 73/78 Convention, still in force, is concerned with the entire ship, and includes provisions on ship design and the devices that must be included to prevent the release of pollutants (Bava et.al, 2002).

The amount of oil spilled annually worldwide has been estimated at more than 4.5 million tons (Bava et.al, 2002). Illegal oil spills at sea occur during tanker and cargo ship operations, where ballast waters, tank-washing residues, fuel oil sludge and machinery space bilge deliberately are discharge into the sea (Maar et.al., 2003). The greatest source of marine oil pollution is the operational ship pollution at sea that is around %45, whereas only %7 of the oil in the sea can be directly attributed to accidents (Bava et.al, 2002). In addition to the main pollutants, accidents on platforms, operative discharges into rivers and natural sources are the other contributors of oil spills (Figure 1).

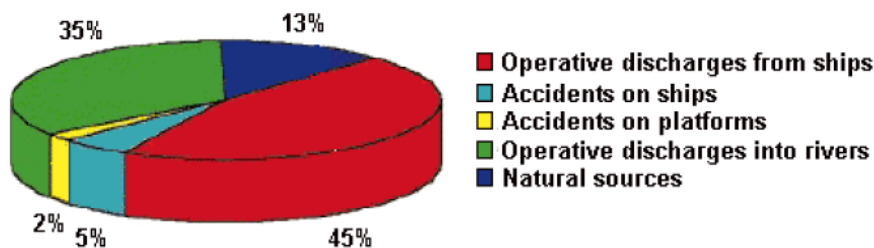


Figure 1. Percentages of possible sources of oil pollution (Bava et.al, 2002).

The %30 of international marine trade takes place among the ports of Mediterranean and nearby seas. As the world's %28 of the petroleum transport passes through Mediterranean the %50 of the total transportation is considered to be risky and dangerous. Every year nearly 20.000 tons of petroleum leaks to Mediterranean from the surrounded 60 oil refining plants as a result of consciously or unconsciously accidents (Günel, 2004).

Turkey is surrounded by three main Seas and potentially under serious oil spill threat. The coastlines of Mediterranean Sea, Aegean Sea, Marmara Sea including the Bosphorous and Dardanelli straits are among the most effected shores of Mediterranean basin (Figure 2). Approximately, 350 accidents resulted in oil spill into Bosphorous occurred in the last ten years. In order to keep the damages at a minimum, a draft law for "National Contingency Plan" is being prepared by the Ministry of Environment and Forestry and the Undersecretariat of Marine Affairs. At present, 14 contingency plans of 21 coastal cities are existent. In addition to these legislations, Turkey, has also signed the International Convention on Civil Liability for Oil Pollution Damage (CLC) and the International Oil Pollution Compensation Funds (IOPC Funds) for the maritime casualties involving oil-carrying ships (Bebek, 2000).

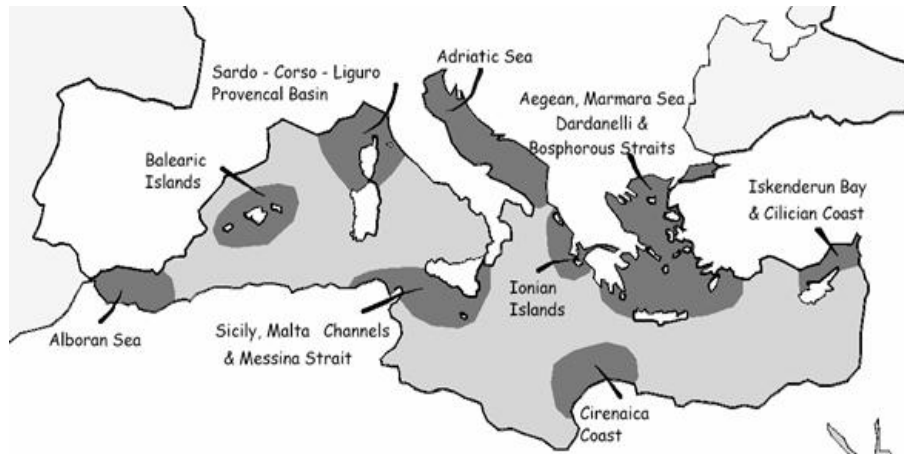


Figure 2. Illegal oil spill discharge zones in the Mediterranean basin according to the Barcelona Convention (WWF).

In major case of discharged oil to the seas such as the latest one occurred at Lebanon coasts, the detection and monitoring of the oil spills have critical importance for rapid emergency response activities. These should cover four basic issues; *i)* prevention *ii)* alarm, *iii)* monitoring and *iv)* damage quantification (Bava et.al, 2002). Whatever its source is, oil spill pollution will continue to occur, therefore, in order to lessen its effect, the improvement of its detection and continuous monitoring are the most important issues to effectively plan countermeasures responses. In this aspect, urgent need for the establishment of an operational satellite-based oil spill monitoring system in the Turkish and Northern Cyprus's territorial waters and the importance of the ground receiving station at ITU, the first ground receiving station dedicated to remote sensing in Turkey, to establish and use such a system effectively must be understood.

STUDY AREA and DATA USED

As one of the East Mediterranean countries, Lebanon, neighboring Syria and Israel, has 225 km coastline (Figure 3). The most recent oil pollution that occurred due to the bombing of a power plant at Jieh, 12 miles south of Beirut, has approximately affected 1/3 of the whole Lebanese coastline, nearly 70-80 km north of the power plant. The affected areas are composed of sandy beaches, rocky beaches, fishing ports and marinas where the petroleum is depriving plant and fish life of essential oxygen, beneath the surface.



Figure 3. Map and the MODIS image (26 April 2002) of the study area.

Depending on the weather conditions, it could be also a serious threat to the neighboring Mediterranean countries such as Turkey, Cyprus and Syria. Among them, Northern Cyprus, 162 km away from Lebanon, has a length of approximately 330 km coastline with up to 12km nautical miles of territorial waters (Figure 3). Since its coastlines are famous with its crystal-clear, unpolluted water and comprise the main nestling ground for endangered sea turtles in the Eastern Mediterranean, this pollution is being considered a big risk to the tourism which is the main income of the country.

In this study, as an active sensing system, 4 of total 20 Radarsat -1 images acquired by ITU-CSCRS were used in the analyses (Table 1).

Table 1. The characteristics of the radar data used.

Satellite	Acquisition date	Beam mode	Spatial resolution (m)	Band	Wavelength (cm)	Polarisation	Coverage (sq km.)
RADARSAT-1	21/07/2006	Fine	8	C	5.3	HH	50 x 50
	17/08/2006	Wide	100				500 x 500
	24/08/2006	Wide	100				500 x 500
	1/10/2006	Fine	8				50 x 50



METHODOLOGY

There are variety of ways to monitor oil spill events such as visual surveys with aircrafts, microwave radiometers (MWR), Laser Fluorosensor (LFS), Infrared Line scanner (IR), Side looking Airborne Radar (SLAR) and Synthetic Aperture Radar (SAR). Among these, satellite data, especially Synthetic Aperture Radar (SAR) images, has an important role in oil spill detection when used in conjunction with conventional observation techniques such as aircraft and surface vessels to achieve synoptic monitoring of oil spill events. In addition to this, they are relatively economical with the capabilities of large coverage per satellite pass, providing data in all weather conditions including day and night sensing, adjustable acquisition and processing to reach semi-automatic procedure. However, there are also some limitations such as the wind speed which should be min. 2 m/s and max. 13 m/s, sensor sensing capabilities and mostly look a likes.

Interpretation of radar remote sensing is mostly based on the roughness and the moisture content of the feature. The surface roughness control how the microwave energy interacts with the target and it's generally the dominant factor in determining the tones seen on a radar image. Moisture, due to electrical properties affects the brightness value proportionally. The increase in moisture increases the brightness value in the image. However, there is an exception if the case is a water body which will act as a flat surface and reflect incoming pulses away from a target that result in darker appearances. If the water is still, the tones of the surface will be nearly to dark, however for open water, the dynamics of water body including the atmospheric conditions cause a rough surface which cause the grey level interval shift to brighter values.

Oil slicks on sea can be detected because of the dampening effect of oil on capillary waves (Figure 4). Radar images turn out to be an advantage for oil spill detection at this point where oil can be detectable as black patches on images.

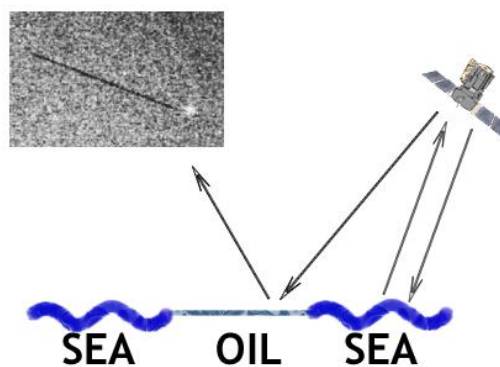


Figure 4. Dampening effect of oil spill



There are three different detection techniques:

- **Manual detection:** A trained human interpreter is capable of distinguish between oil slicks and look-alikes (i.e. natural slicks, threshold winds, wind shadows behind islands, wind slicks, surface currents, internal waves, reflections of bottom topography in shallow areas, plums of municipal sewage, glacial flour, biogenic oils, whale and fish sperm, etc.) based on experience and prior information concerning location, external information about weather conditions, differences in shape and contrast to surroundings between oil slicks and look-alikes, etc (Anne, 1999).
- **Semi-automated detection:** After the inspection of the image visually, isolation of all the dark signatures can be presented in the image through appropriate threshold and segmentation processing.
- **Fully-automated detection:** this is the classification of the image where the classification rule is constructed by combining statistical modelling with a rule-based approach (Anne, 1999).

ANALYSES and RESULTS

In general, SAR data are subject to speckle which is a natural phenomenon generated by coherent processing of radar echoes. The presence of speckle not only reduces the interpreter's ability to resolve fine detail, but also makes automatic segmentation of such images difficult. To diminish the effect of speckles, either low pass filters or resampling methods can be applied. In this study, resampling method was used not only to reduce the effect of speckles but also the volume of data and processing time.

In the analysis, two oil spill detection methods were used; *i)* manual detection *ii)* fully-automated detection. For the manual detection phase, oil slicks and look-alikes were distinguished visually by examining the differences in shape and contrast and possible oil spills were digitized (shown as red colour in Figure 5). However, there wasn't any possibility to verify the candidate oil spills detected in the Northern Cyprus coasts (in Figure 5b and c).

In the second method, object-oriented approach was only tested for the image which possible risk might be affected to the Northern Cyprus coasts. In this method, not only the spectral information but also the spatial information (i.e. shape, size, texture and neighbourhood relations) were taken into consideration for mapping the possible oil spills. In general, the procedure has two steps; *i)* segmentation *ii)* classification. As a first step, segmentation was done in two levels using the parameters given in the Table 2. After segmented images were formed, classification outputs were produced using the class hierarchy given in Figure 6. After combining and analyzing both classifications in two levels, the output image was obtained (Figure 7). As can be seen from the Figures 5b and 7, there is a consistency between two detection methods.

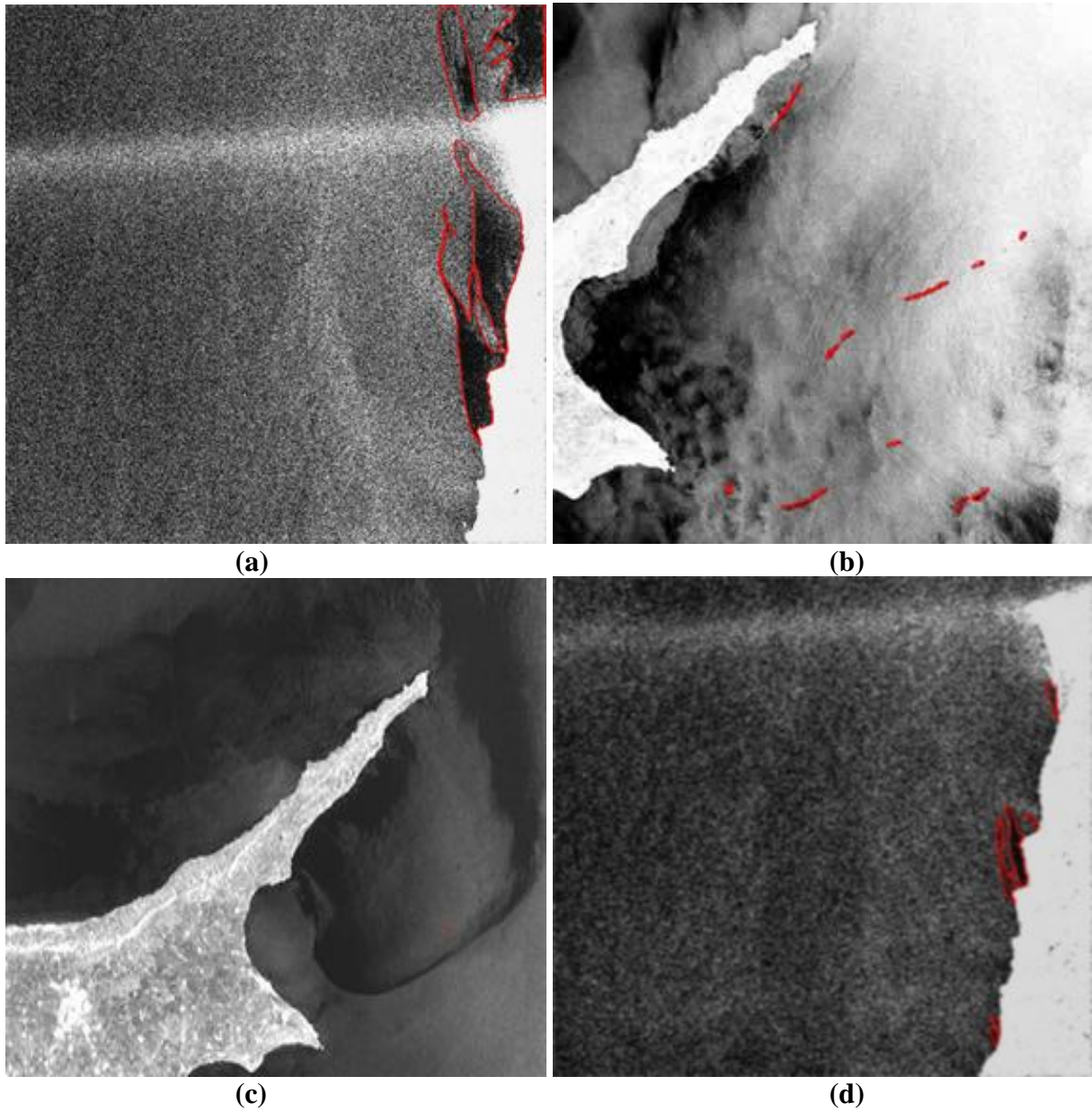


Figure 5. Candidate oil spills (shown as red colour) detected by manual detection methods.

**(a) Lebanon coast - 21 July 2006. (b) Northern Cyprus coast - 17 August 2006.
(c) Northern Cyprus coast - 24 August 2006. (d) Lebanon coast - 1 October 2006.**



Table 2. Segmentation parameters.

Segmentation Level	Segmentation Scale	Homogeneity Criterion	
		Shape- Color	Smoothness- Compactness
Level 2	1000	0.1 – 0.9	0.9 – 0.1
Level 1	250	0.3 – 0.7	0.3 – 0.7

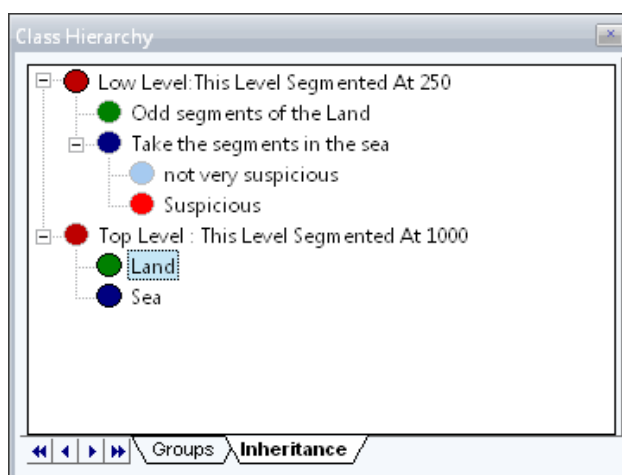


Figure 6. Class hierarchy.

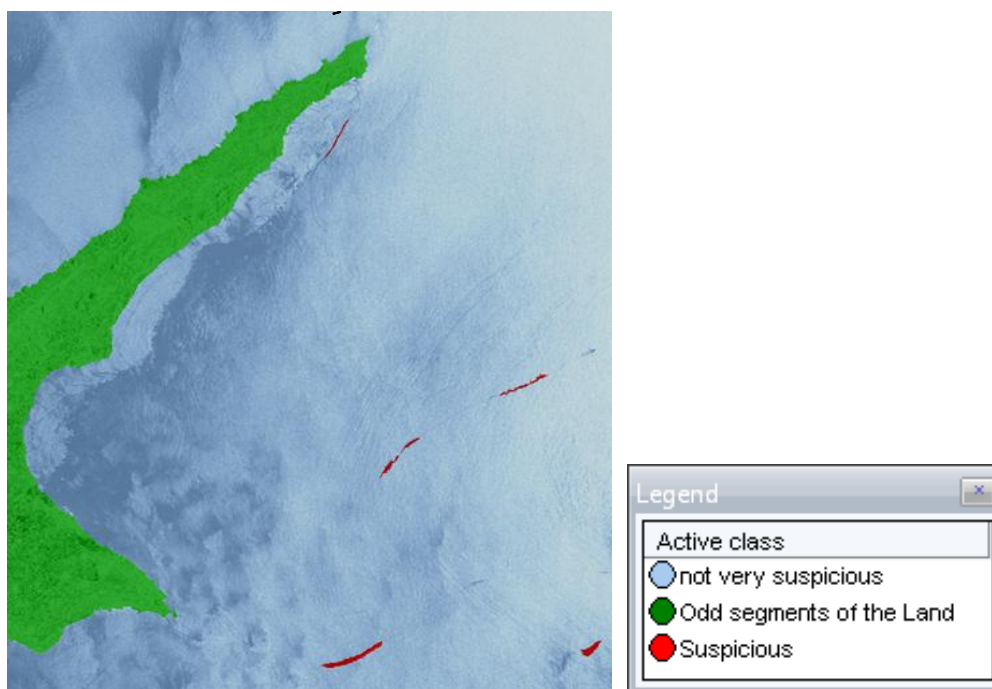


Figure 7. Classification output and legend for the radar image dated on 17th August 2006.



CONCLUSIONS

Remote sensing and satellite data are effective tools for man-made hazards like illegal oil spill discharges that need a synoptic view when there is an emergency status and where on site surveying is not possible. Another very important aspect of remote sensing is the production of the near-real time data by operational satellite-based systems so that [authorities](#) can quickly and directly use it. The data to be supplied can be position of the possible oil spill, date and time of observation, estimated size of the polluted area, polluter category (i.e., ship, platform, industry) and probability level (i.e., low, medium or high). If this type of information can be made available to response crews in a short enough time frames following a spill incident, then it can be used to lessen the potentially disastrous effects of a major oil spill on the marine ecosystems.

Similar early warning system proposed by ITU-CSCRS is being discussed by the Turkish Ministry of Environment and Forestry, which is the main authority responsible to prepare all regulations as being applied in developed EU countries. As shown in this study, space-borne SAR missions can provide valuable information in monitoring and policing the marine-pollution problems. If this system is established in Turkey also in Northern Cyprus, potentially vulnerable areas can be easily located and used as a reference for future routine monitoring and protection of the coastal environments.

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A STUDY ON THE AFTERSHOCK SEQUENCES OF EARTHQUAKES OCCURRED IN TURKEY

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In this work, a study on the occurrence of the aftershock sequences of earthquakes occurred in Turkey has been made. A complete and homogenous catalog of all aftershock sequences is provided for main shocks with $MD \geq 4.9$, which occurred in Turkey for the time period 1995-2005. KOERI and DAM have been used as data source and the catalogs of nine aftershock sequences are compiled. The relations between several aftershock parameters such as the number of aftershocks, the magnitude of the largest aftershocks, aftershock area, b-value, p-value and, c-value versus the main shock magnitude, b-value versus the maximum and minimum magnitude of aftershocks, p-value versus the maximum and minimum magnitude of aftershocks, between p-value and c-value, between b and p-value are calculated and these relationships are developed using the orthogonal regression method. The results show that linearity exists between some aftershock parameters. For all that no relations are observed between a few parameters, it is found some positive and negative relationships. It is observed that there is no relation between the aftershock parameters and faulting types. Thus, the study of aftershock sequences is of great important because much information about time, space or magnitude distribution of earthquakes.

Key Words: *Turkey, aftershock sequence, statistics, orthogonal regression.*

INTRODUCTION

It is well known that several seismicity patterns exist such as foreshocks, aftershocks, swarms and seismic sequence. The recognition of these patterns usually follows the main event and the temporal evolution of the phenomenon (Drakatos and Latoussakis, 2001). It is a remarkable fact that a shallow earthquake of large magnitude is usually followed by a series of smaller earthquakes called aftershocks. These aftershocks occur close to the focus of the main earthquake, gradually decreasing in activity with increasing time, which lasts over many months (Utsu, 1961). The laws governing the occurrence of aftershocks have been investigated statistically and physically by many seismologists and some principal results are obtained (Mogi, 1962; Ranalli, 1969; Kisslinger and Jones, 1991; Guo and Ogata, 1997; Telesca et. al., 2001; Öztürk and Bayrak, 2005).

For many aftershock sequences, it can be drawn some figures and it can be taken several statistics on the occurrence of aftershocks from these figures. Utsu (1961) summarized these studies as follows;



- a) The relation between the main shock magnitude and the magnitude of the largest event in its aftershock sequence,
- b) The relation between number of aftershocks and the main shock magnitude,
- c) The relation between the main shock magnitude and time interval between the main shock and the largest aftershock,
- d) The magnitude-frequency relation for shocks in an aftershock sequence,
- e) The time-frequency relation for shocks in an aftershock sequence,
- f) The relation between main shock magnitude and other parameters characteristic of an aftershock sequence, and between each aftershock parameters.

In this study, using the catalogs of nine aftershock sequences, an attempt is made to calculate the reliable relationships between the main shock and aftershock parameters and between each of the aftershock parameters such as the magnitude of the main shock, the number of the aftershocks, aftershock area, the magnitude of the maximum and minimum aftershocks, b-value of frequency-magnitude distribution, p-value which describes the decay rate of aftershock activity, and c-value that depends on the rate of activity in the earliest part of the sequences.

DATA and STATISTICAL PROPERTIES of AFTERSHOCK SEQUENCES

In the present study, in order to describe the aftershock activity following all moderate and large earthquakes, several parameters characterizing the distribution of aftershocks in time, space, and magnitude in each sequences have been analyzed using a complete catalog of nine aftershock sequences of shallow earthquakes in Turkey with magnitude 4.9 and greater during ten years from 1995 through 2005. The catalogs are identified in the first one month after the main shocks. Statistical properties of the occurrence of aftershock sequences that include Dinar earthquake of 1 October 1995, İzmit earthquake of 17 August 1999, Düzce earthquake of 12 November 1999, Afyon-Sultandağı earthquake of 3 February 2002, Tunceli-Pülümür earthquake of 27 January 2003, Bingöl earthquake of 1 May 2003, Denizli-Buldan earthquake of 26 July 2003, Erzurum-Aşkale earthquake of 28 March 2004, and Ankara-Bala earthquake of 31 July 2005 have been studied. The website of the Atatürk University, Earthquake Research Center Directorship (DAM) is used for the aftershock sequence of Erzurum earthquake while the website of the Bogazici University, Kandilli Observatory and Earthquake Research Institute (KOERI) is used for other eight sequences.

General information of the earthquake occurrence is given in Table 1. Also the maximum (M_{max}) and minimum (M_{min}) magnitudes of aftershock sequences as well as the slip type of main earthquakes are given.

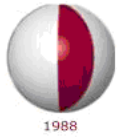


Table 1. Catalog of aftershock sequences in Turkey (1995-2005).

Ye ar	Mon th	Da y	Origin Time	Longit ude	Latitu de	Dep th (km)	Magnit ude (M_D)	Ma_{max}	Ma_{min}	Slip Type
1995	10	1	15:57:12.6	30.15	38.06	5.0	6.0	4.9	2.9	NF
1999	08	17	00:01:39.1	29.86	40.75	17.0	6.7	5.5	2.3	SSF
1999	11	12	16:57:19.5	31.16	40.76	10.0	6.5	5.4	2.3	SSF
2002	02	03	09:11:28.0	31.25	38.58	5.0	6.0	5.3	2.5	NF
2003	01	27	07:26:22.0	39.77	39.46	5.0	6.2	4.2	3.0	SSF
2003	05	01	03:27:04.0	40.47	39.01	5.0	6.4	4.6	2.7	SSF
2003	07	26	11:36:49.0	28.89	38.11	4.3	5.2	4.7	2.2	NF
2004	03	28	06:51:15.0	40.63	39.82	5.0	5.3	4.2	1.9	SSF
2005	07	31	00:45:00.0	33.08	39.43	5.0	4.9	4.6	2.3	SSF

NF: Normal Faulting, SSF: Strike Slip Faulting.

For each aftershock sequence, the number of aftershocks (N), the magnitude of the main shocks (M_D), aftershock area (A , in km^2), magnitude of completeness (M_c), and b , p , $M \geq M_c$ (M ; magnitude) and c -value, which is strongly influenced by the incompleteness of the catalog in the early part of sequence, are also given in Table 2. The estimate of M_c is based on the assumption of frequency-magnitude power-law distribution against magnitude and is used in the calculation of b -value describing the relationship between the frequency of occurrence and magnitude earthquakes, while $M \geq M_c$ is selected for the calculation of p -value which is the occurrence rate of aftershock sequence in time.

Figure 1 shows the results of statistical analysis. Several formulas are developed between the N and M_D , Ma_{max} and M_D , A and M_D , b -value versus Ma_{max} , Ma_{min} , and Δm (subtraction of M_D and Ma_{max}), and p -value and c -value using the orthogonal regression analysis. Because the standard least squares method is based on the assumption that the values on the horizontal axis are estimated without errors, we applied the orthogonal regression method, which is one of the standard linear regression methods to correct for the effects of measurement error in predictors, in the fitting on the relations. Both methods are applied to data for N - M_D relation to show the differences between the both fits in Figure 1. The blue line represents the least squares fit and red lines show the orthogonal regression fits. Also, calculated linear relationships are given in the upper part of the plots.



Table 2. Statistical properties of the nine aftershock sequences.

Earthquake	<i>N</i>	<i>M_D</i>	<i>M_c</i>	<i>b</i> -value	<i>M</i> ≥ <i>M_c</i>	<i>c</i> -value	<i>p</i> -value	<i>A</i> (km ²)
1 October 1995 Dinar Earthquake	311	6. 0	3.0	<i>b</i> =1.52±0 .04	3.3	0.362	<i>p</i> =1.06±0 .17	5223. 00
17 August 1999 İzmit Earthquake	108 2	6. 7	2.8	<i>b</i> =1.04±0 .03	3.1	0.158	<i>p</i> =0.84±0 .07	7041. 60
12 November 1999 Düzce Earthquake	961	6. 5	2.8	<i>b</i> =0.96±0 .05	3.2	0.344	<i>p</i> =1.36±0 .12	4006. 80
3 February 2002 Afyon Earthquake	124	6. 0	3.1	<i>b</i> =0.77±0 .10	3.1	0.133	<i>p</i> =0.92±0 .13	3859. 00
27 January 2003 Tunceli Earthquake	171	6. 2	3.0	<i>b</i> =2.21±0 .04	3.1	0.050	<i>p</i> =1.04±0 .09	3957. 20
1 May 2003 Bingöl Earthquake	459	6. 4	3.2	<i>b</i> =1.50±0 .04	3.3	0.303	<i>p</i> =0.77±0 .10	3174. 30
26 July 2003 Denizli Earthquake	116	5. 2	3.0	<i>b</i> =1.15±0 .06	3.0	0.427	<i>p</i> =1.28±0 .23	884.7 6
28 March 2004 Erzurum Earthquake	423	5. 3	2.5	<i>b</i> =1.11±0 .06	2.5	0.053	<i>p</i> =0.79±0 .05	1261. 50
31 July 2005 Ankara Earthquake	342	4. 9	3.1	<i>b</i> =1.57±0 .10	3.4	1.131	<i>p</i> =1.44±0 .47	1169. 10

Several linear equations are found between the main shock and different parameters of aftershock sequences. The relationships are given with the uncertainties in parentheses as follows;

$$\text{Log}N = 0.34(0.20) * M_D + 0.49(0.50) \quad (1)$$

$$Ma_{max} = 0.62(0.33) * M_D + 1.12(0.81) \quad (2)$$

$$\text{Log}A = 0.47(0.07) * M_D + 0.63(0.18) \quad (3)$$

$$b = 5.35(0.68) - 0.84(0.31) * Ma_{max} \quad (4)$$

$$b = 1.36(0.51) * Ma_{min} - 2.02(0.81) \quad (5)$$

$$b = 0.63(0.34) * \Delta m + 0.62(0.38) \quad (6)$$

$$p = 0.69(0.22) * c + 0.83(0.14) \quad (7)$$

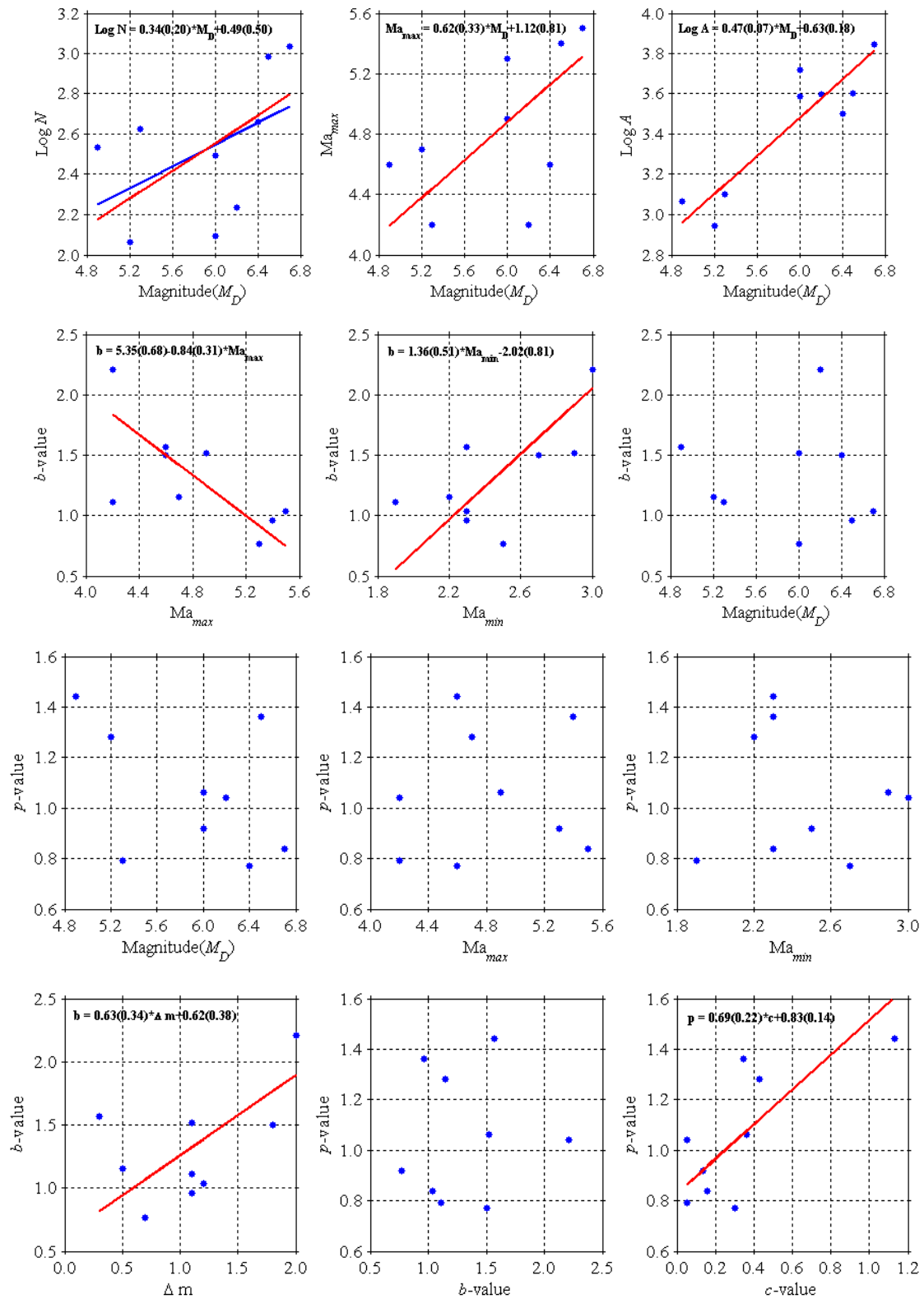


Figure 1. Linear equations between the main shock and aftershock parameters, and between each of aftershock parameters. The blue line represents the least squares fit and red lines the orthogonal regression fits.



DISCUSSIONS

Several stochastic and statistic models have been proposed to represent at least part of the observed characteristics of the occurrence of aftershocks. The importance of aftershocks in earthquake statistics has been pointed out by some investigators. The statistical properties of aftershock occurrence may be a factor to be considered in a general study of earthquake occurrence (Utsu, 1969). Utsu (1961) made a statistical study on the occurrence of aftershocks for Japanese aftershocks from 1926 through 1959 and found several relations between aftershock area and maximum magnitude of aftershocks versus the magnitude of the main shock, and b and p -values, however, not a relation p -value and the magnitude of the main shock. Drakatos and Latoussakis (2001) analyzed a catalog of aftershock sequences in Greece and suggested a linear relation between the numbers of aftershocks, maximum magnitude of aftershocks versus the magnitude of the main shock. Also, Öztürk and Bayrak (2005) studied the statistical characteristics of eight aftershock sequences of earthquakes that occurred in Turkey during 1995-2004. They used the least squares method in order to develop some linear relations between aftershock parameters and observed positive relations between the numbers of aftershocks, maximum magnitude of aftershocks, and aftershock area versus the magnitude of the main shock, between b -value and minimum magnitude of aftershocks, and between p -value and c -value. They also found a negative relation between b -value and maximum magnitude of aftershocks while they found no correlation between b -value, p -value, and c -value versus the magnitude of the main shock, p -value versus the maximum and minimum magnitude of aftershocks, and between b and p -value. According to them, there is no relation between the aftershock parameters and faulting types.

In this study, a general statistical survey of the occurrence of aftershocks was made using the data from the region of Turkey. Complete catalogs of nine aftershock sequences are compiled, for all earthquakes with $M_D \geq 4.9$, which occurred during ten years from 1995 to 2005. Figure 1 shows the results of the analysis concerning main shock and the parameters of aftershock sequences. The results show that positive linearity exists between numbers of aftershocks, maximum magnitude of aftershocks, and aftershock area versus the M_D , between b -value versus Ma_{min} and Δm , and between p -value and c -value. On the contrary, there is a negative relation between b -value and Ma_{max} . However, no correlation is observed between b and p -values versus M_D , p -value versus the Ma_{max} and Ma_{min} , and between b and p -values. It is not observed a relation between the aftershock parameters and slip types. Thus, in the case that a few parameters such as magnitude of the main shock, maximum and minimum magnitude of aftershocks are known, the other fundamental aftershock parameters can be estimated from these equations.



CONCLUSIONS

A statistical study on the occurrence of the aftershock sequences of nine earthquakes has been achieved. To this end, complete and homogenous catalogs of all aftershock sequences of shallow earthquakes are provided for main shocks with magnitude 4.9 and larger, which occurred in Turkey during ten years from 1995 through 2005. The catalogs are identified in the first one month after the main shocks. Statistical properties of the occurrence of aftershock sequences including Dinar earthquake of 1 October 1995, İzmit earthquake of 17 August 1999, Düzce earthquake of 12 November 1999, Afyon-Sultandağı earthquake of 3

February 2002, Tunceli-Pülümür earthquake of 27 January 2003, Bingöl earthquake of 1 May 2003, Denizli-Buldan earthquake of 26 July 2003, Erzurum-Aşkale earthquake of 28 March 2004, and Ankara-Bala earthquake of 31 July 2005 have been investigated. The aftershock sequence of Erzurum earthquake is taken from the website of the Atatürk University, Earthquake Research Center Directorship whereas the website of the Bogazici University, Kandilli Observatory and Earthquake Research Institute is used for other eight aftershock sequences.

The linear correlations between the aftershock parameters such as the number of aftershocks, the magnitude of the largest aftershocks, aftershock area, b -value, p -value, and c -value versus the main shock magnitude, b -value versus the maximum and minimum magnitude of aftershocks, p -value versus the maximum and minimum magnitude of aftershocks, between p -value and c -value, between b and p -value are developed using the orthogonal regression method. The results show that positive linearity exists between numbers of aftershocks, maximum magnitude of aftershocks, and aftershock area versus the magnitude of the main shock, between b -value and minimum magnitude of aftershocks, between b -value and subtraction of magnitude of main shock and the largest aftershock, and between p -value and c -value. On the contrary, there is a negative relation between b -value and maximum magnitude of aftershocks. However, no correlation is observed between b and p -value versus magnitude of the main shock, p -value versus the maximum and minimum magnitude of aftershocks, and between b and p -value. Also, there is no relation between the aftershock parameters and slip types. If a few parameters such as magnitude of the main shock, maximum and minimum magnitude of aftershocks are known, the other fundamental aftershock parameters can be estimated from these equations. Thus, because much information about time, space or magnitude distribution of earthquakes, the study of aftershock sequences is of great important.



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LANDSLIDES: AN ENVIRONMENTAL DISASTER IN NORTHERN IRANIAN FOREST ECOSYSTEM

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Mass movement or mass wasting is movements of masses of bodies of soil, bed rock, rock debris, soil, or mud which usually occur along steep-sided hills and mountains because of the pull of gravity. Different types of mass movements and particularly landslides produce a variety of effects and have to be either prevented or controlled at high level of reliability. The disaster mitigation policy which emphasizes prevention and preparedness is therefore a reasonable approach leading to save life, money and time and ultimately targeting sustainability. The landslide occurrence has become a major problem to all different investments made in northern part of Iran and besides that, many parts of the natural resources has also degraded as well. In the present study the main reasons behind occurring frequent landslides in the area, mainly covered by forest stands, will be declared and the appropriate approach of integrated watershed management will also discussed as a suitable disaster mitigation policy.

Key words: *Disaster Mitigation, Hyrcanian Forest, Iran, Landslide, Watershed Management*

Introduction

Expanding human populations may have important effects on the available resources which frequently lead to natural resources degradation, since the growing population alters the character of the land, hugely. Therefore, certain natural disasters viz. hydro-meteorological disaster (floods and wave surges, storms, droughts, extreme temperatures and forest/scrub fires, landslides and avalanches); geophysical disaster (earthquakes and tsunamis and volcanic eruptions) and biological disasters (covering epidemics and insect infestations) as well as the technological disasters comprise industrial accidents (chemical spills; collapses of industrial infrastructures; explosions; fires, gas leaks; poisoning and radiation), transport accidents, collapses of domestic/non-industrial structures; explosions and fires likely to occur more frequent than earlier. The increment and the trend of different disasters during almost one century have been shown in Fig. 1. Besides that, the vulnerability of human communities is also sensitized and therefore may get harmed much more than earlier. Scrutinizing the reports also shows that the rate of numbers of people killed by natural disasters during 1970-2004 has an almost constant trend whereas the number of people affected by natural disasters during the same period is progressively increased. As per the disaster statistics from 1995 to 2004 (UN/ISDR, 2004), in the Asia, landslides, among the aforesaid disasters, stand at the forth priority and after floods, wind storms and droughts.

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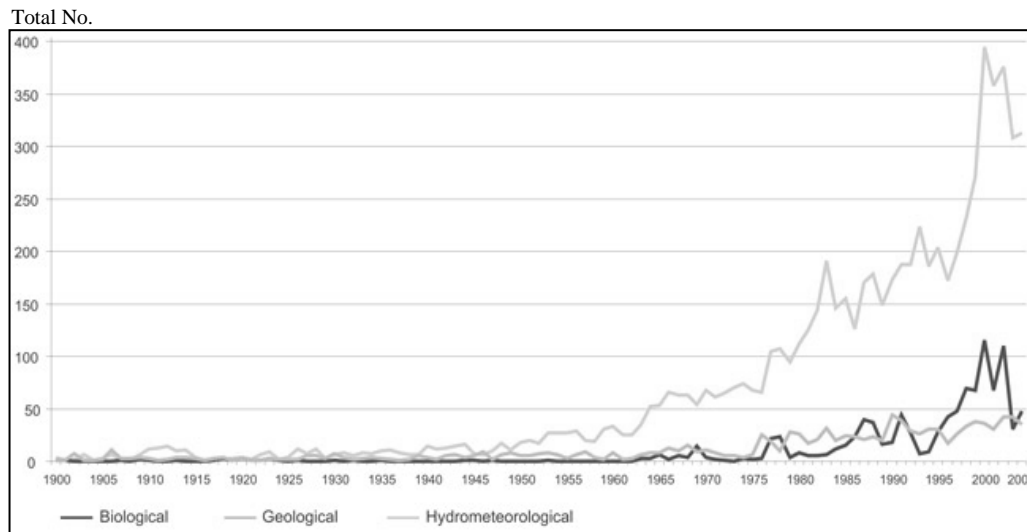


Fig.1 Number of natural disasters registered in Emergency Disasters Data Base (EMDAT) from 1900 to 2004 (UN/ISDR, 2004)

The rate of effects of disasters has been drastically accelerated in developing countries where the rate of natural resources exploitation has rapidly increased during last years. Based on statistics collected for absolute and relative values of people killed and affected by disasters for the period of 1994–2003 (UN/ISDR, 2004), it is seen that the Asia bears the maximum numbers of different disasters except biological one among all five continents. Among 25 studied countries distributed throughout the world, the Iran has also been characterized as the 7th and 11th country in view points of number of affected people (>110000) and economic damages (>USD 12 Billion), respectively.

It is seen from the explanation presented above that landslides are supposed as one of the important environmental disasters particularly in developing countries and therefore have to be carefully studied. The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on an over-steepened slope is the primary reason for a landslide, there are other contributing factors:

- erosion by rivers, glaciers, or ocean waves create oversteepened slopes
- rock and soil slopes are weakened through saturation by snowmelt or heavy rains
- earthquakes create stresses that make weak slopes fail
- earthquakes of magnitude 4.0 and greater have been known to trigger landslides
- volcanic eruptions produce loose ash deposits, heavy rain, and debris flows
- excess weight from accumulation of rain or snow, stockpiling of rock or ore, from waste piles, or from man-made structures may stress weak slopes to failure and other structures



Mechanism of landsliding

Slope materials that become saturated with water may develop a debris flow or mud flow. The resulting slurry of rock and mud may pick up trees, houses, and cars, thus blocking bridges and tributaries causing flooding along its path. Any area composed of very weak or fractured materials resting on a steep slope can and will likely experience landslides. Shallow landsliding is one of the most common geomorphic processes in the mountain areas of the world. Shallow landslides usually have small to medium dimensions and typically affect the soil mantle. Shallow landslides also constitute a major process of land degradation and, in many areas, are responsible for a substantial fraction of the total sediment delivered from a watershed (Beguir, 2006). Landslides may impact sediment production in three ways; firstly, by the direct delivery of debris to the channel. Secondly, the subsequent erosion of material exposed in the landslide scar can provide sediment to the streams and rivers. Finally, the mass movement itself may cause erosion (Peart et al. 2005). Although the physical cause of many landslides cannot be removed, geologic investigations, good engineering practices, and effective enforcement of land-use management regulations can reduce landslide hazards.

Landsliding in northern Iranian forest ecosystem

Many factors may affect on the occurrence of soil erosion in Iranian northern forest, namely Hyrcanian forest, some of which such as steep slope, shallow depth soil, susceptible geologic foundation and relatively critical amount of precipitation may facilitate the initiation of soil erosion but it often remains within the range of soil erosion tolerance. Whereas some other human factors particularly careless land use planning, intensive and improper road construction, traditional and heavy machinery harvesting and nonexistence of soil conservation and watershed management measures exaggerate the soil erosion problem in the northern forest of Iran (Sadeghi, 2005). Landslide is one of the main natural hazards in Iran that annually makes huge economic and personal defects. Primary estimations show that annual tangible defects of landslide are about USD 600 Million. Mountainous feature, high tectonic activity, high seismicity, geological and climatological variety make the Iranian plateau capable for occurring various kinds of landslides (Deputy of Forest, Range and Watershed Organization of Iran, Ministry of Agriculture, 2000). Among many different types of soil erosion in the Hyrcanian forest, landslides play an important role in disturbing the forest areas and contribute lots of sediment yield in the adjacent rivers. The concentration of landslides frequencies in Iran has been shown in Fig. 2.

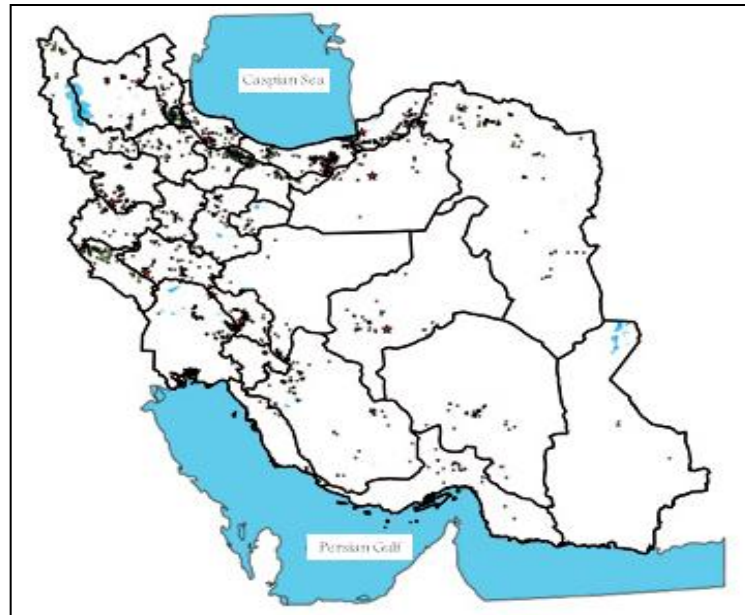


Fig.2 Landslide distribution map of Iran (Deputy of Forest, Range and Watershed Organization of Iran, Ministry of Agriculture, 2000)

The present study is mainly based on field investigations and data collected by different authorities. As it is seen in Fig. 2, most of the landslides have been concentrated in western and northern parts of the Iran where more annual precipitation falls. Besides high amount of precipitation i.e. from 600 to 2400 mm per annum, the susceptibility of geologic formation in viewpoints of material as well as structure bedding increases the potential of landslides. The occurrence of landslides then get ascertain when the stability of highly potential areas imbalance through constructing roads, river bank erosion, increasing of slope weight, sand and coal mining and earthquake. Flattening of the natural slopes for agricultural and urban/residential development purposes also play an important role in sensitizing the areas to landslides. Human encroachment to forest stands to get more instant benefits through wood harvesting and land conversion to agricultural and resort areas is another crucial reason behind frequent landsliding in northern forest ecosystems in Iran. Some samples of landslides occurred in Northern provinces of Guilan, Mazandaran and Golestan have been shown in Fig. 3.

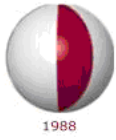


Fig. 3 Some samples of landslides occurred in Northern Iran formerly covered by forest



Remediation

As per the justification made above, controlling and disaster mitigation of landslides is essential because of the on-site and off-site environmental, economic and hydrologic discrepancies effects which they may have. As it was already mentioned there are lots of factors affecting on landsliding in an area comprising natural and anthropogenic reasons. Since some of the natural factors are not controllable and involving them into controlling processes may cost too much, it is very logical to emphasize human-induced factors. Besides that, the disaster mitigation policies emphasizing prevention, taking actions beforehand and preparedness is therefore a reasonable approach which can be materialized through integrated watershed management. In the other words, mitigation, which is the ongoing effort to lessen the impact of natural disasters on people and property, can be achieved by assigning appropriate resources to suitable and different utilities through watershed management may prevent many types of land degradation including landslides.

Utilization of land resources based on their capability as well as suitability for different uses can be supposed as one of the most fundamental approach which certainly targets the sustainability. The recognition of human needs and demands in a watershed and trying to satisfy them with available different resources existed inside and outside the watershed and within a permissible range ascertain the sustainability and the rate of imbalance is therefore kept at the minimum acceptable range as mentioned by Cole and Stankey (1997), and Warren and French (2001) and Ahn *et al.* (2002) in introducing Pressure-State-Response (PSR) and Limits of Acceptable Change (LAC) approaches. It is easily understandable that both the approaches can be carefully followed by the concepts considered in integrated watershed management. Although, the performance of implementation of measures under watershed management projects may take more times to be appeared compare to engineering activities but it is very well known to all environmentalist and ecologist that is the way of pertinent dealing with nature. The application of engineering measures such as retained walls, drainage systems, water diversion and topographic changing are also necessary for instant controlling of the landslides but they have to be completed with non-structural activities as mentioned by Shou and Chen (2005) as a remediation treatment for slope stabilization in Li-shan, Central Taiwan. Peart *et al.* (2005) also concluded that the revegetation of landslide debris trails may be quite rapid and this restricts the time for fluvial action on the exposed materials. Plant roots acts as columns that protect soil from movement. Root network makes the superficial soil layers, such as sponge which increases ventilation and water evaporation from them. After decaying of the roots, organic content is increased in the soil and then the superficial soil layers would have more capability for water storing. This process limits water infiltration to deep layers, which results more stability.

Depopulation, land abandonment and encouraging vegetation recovery in formerly occupied areas, including reforestation to promote woodland can also be considered as another immediate solution for reduction of landslide hazards in the northern areas of Iran. The same approach has been successfully reported by Begueri (2006) during the 20th century in the Pyrenees areas. A shift in the topographic location of landslides is also detected, pointing to an increased importance of water redistribution in the slopes after prolonged rainfall periods, where the valley slopes still facilitate landsliding, even after land abandonment and revegetation by shrubs or trees. Confining the sand mining and road construction is a suitable method for avoiding undercutting the slope bottoms and increasing the slope stability.



Conclusions

It can be concluded from the results of the present study that the northern hyrcanian forest ecosystem of Iran is currently threatened by landslides which are mainly occurred due to mismanagement of the watersheds. The area needs high level of protection which is accessible through integrated watershed management and following the disaster mitigation policy. Improper road construction, intensive traditional and heavy machinery harvesting and land use diversification have to be seriously controlled to mitigate the landslide occurrences. The better understanding of the forest watersheds and detailed studying of the landsliding in the area is therefore suggested to have access to sound strategies for controlling landslides in northern Iranian forest in further minute researches.

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MAN'S ATTITUDE TOWARD THE WORLD AND ITS ROLE IN ENVIRONMENTAL PROTECTION

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Pollution is a clear threat to human security worldwide, and the protection of the environment in the world is the only way for human being's continuation of the life. All strategists and scientists have alarmed the danger and given solutions and have asked for implementation of serious decisions. One of the most important solutions is the change of man's attitude towards the world and himself.

What people do about their ecology depends on what they think about themselves in relation to things around them. The environmental crisis is not only the result of certain economic, political, and social factors but also a moral and spiritual crisis, which will require broader philosophical and moral understandings of us as creatures of nature, embedded in life cycles and dependent on ecosystems.

Besides all rational and scientific solutions, which are very important in their own places, the general attitude toward the world, human beings, and nature is of great importance in protecting of the environment. There is a philosophy of life, which looks at men as responsible and effective beings in the world. For them, all natural resources are considered to belong to all human beings, for now and ever. That is why they consider themselves responsible for protecting the natural environment.

This paper attempts to show that if man's attitude towards the world and himself changes, it can solve the environmental problem. According to this attitude, man should not consider himself as the center of the world to exploit all resources for his benefit, but man is a creature who should act wisely to protect all living resources for himself, other creatures and coming generations.

Key words: environment, protection, man, attitude, nature, philosophy of life

Introduction

Over the years, our environment has been facing a severe threat. Pollution² is a clear threat to human security worldwide. It comes in many guises.³ The rivers are polluted with undesirable chemicals and toxicants, underground water is being depleted and getting polluted. Forests are being lost at an alarming rate resulting in environmental degradation. A balance in oxygen and water in the environment is being lost, which is so important to sustain and preserve the human civilization on the planet earth.

It is estimated that at least fifty thousand species go extinct each year, and three fourths of the world's bird and a quarter of the world's mammalian species face extinction. Worse, this rate of extinction could be accelerated by rapid climate change.⁴ This climate change is being accelerated by increasing carbon dioxide levels in the atmosphere, an increase which humankind has significantly contributed to, especially by the industrial scale burning of both fossil fuels and tropical rainforest.⁵



The main root for the ecological problem in the world is created by need and greed: the need of the poor and the greed of the investors. While the need of the poor could be fulfilled and balanced against the needs of environmental conservation by controlled planning, the economical investor's greed is difficult to control.

The role of man in environmental crisis

According to scientists and philosophers, man is considered as the major factor in disturbing the natural balance of the universe. Man interferes intentionally or unintentionally in the earth's ecosystems by impairing its perfect order and precise sequence. However, it seems that man has cut off his nose to spite his face and he now is the victim. Grave dangers are manifested in pollution of the air, water, soil, outer space and others, as well as the irrational exploitation of the environment's resources, and inconsistent distribution of human settlements. All these factors have led to different problems, all of which are marked by a disturbance to the earth's natural balance. There are countless examples of disturbances to the environment. Forests have been removed, deserts have been encroached upon, and many species of plants and animals have disappeared throughout the world. The climate has changed and is in fact still changing due to unwise human activities. There is the high use of energy over and above man's need, which raises the temperature of the atmosphere and thus affecting climate.

Man's disruption to the natural balance of forests leads to various problems that are reflected on him as well as other creatures on earth. Soil is washed away, humus shrinks, rainwater runs in torrents, temperatures fluctuate, high and severe winds become more common and drought spreads globally.

For many people an environmental crisis of this complexity and scope is not only the result of certain economic, political, and social factors. It is also a moral and spiritual crisis which, in order to be addressed, will require broader philosophical and religious understandings of ourselves as creatures of nature, embedded in life cycles and dependent on ecosystems.

What people do about their ecology depends on what they think about themselves in relation to things around them. Human ecology is deeply conditioned by beliefs about our nature and destiny.⁶

As the Qura'n illustrates, all disasters of man is because of his selfishness and this selfishness causes him to call others to obey him and collects everything for himself and wastes everything especially natural resources.⁷ Mischief on the land and sea is inflicted by man's unwary interference with the natural laws and environmental systems that are ultimately against his own interests.⁸ Environment pollution, which is tantamount to the disruption of natural balance, is the main form of corruption on earth. As God created man on earth, he decreed that man should preserve this habitat. He gave man the right to invest in it and benefit from it. He enjoined upon man not to cause mischief anywhere.⁹ Therefore, as a rule, there is a direct relationship between wrongdoing and calamities.¹⁰ In addition, committing sin generates corruption everywhere.¹¹



Man's attitude in Environmental Protection

Nature has become desacralized for modern man, although this process itself has been carried to its logical conclusion only in the case of a small minority.¹² Moreover, nature has come to be regarded as something to be used and enjoyed to the fullest extent possible.¹³ In western humanistic philosophy, man is everything and considered to be in the center of world, and pure humanism is believed as the only philosophy of life, therefore, everybody seeks his own benefit and tries to get it, ignoring anything else.

The most important environmental crisis in the world today is due to the attitude of secular science based upon power and domination over nature and a technology, which devours the natural world with no respect for the equilibrium of nature.

Many people express their concern these days about the preservation of the environment, so much so that this has become a trend worldwide. However, clearly, environmental values and priorities must be institutionalized within a responsible society. Environmental values must become an intimate part of the beliefs and aspirations of individual citizens if environmental responsibility is to grow in democratic soil and not from the imposition of what Andre Gorz refers to as "technofascism."¹⁴ An environmental culture must also be a just culture in which citizens identify with and participate in the process of living a life in sustainable relationship to nature.

Thomas Berry suggests that we have become autistic in our interactions with the natural world. In other words, we are unable to value the life and beauty of nature because we are locked in our own egocentric perspectives and shortsighted needs. He suggests that we need a new cosmology, cultural coding, and motivating energy to overcome this deprivation.¹⁵ He observes that the magnitude of destructive industrial processes is so great that we must initiate a radical rethinking of the myth of progress and of humanity's role in the evolutionary process. Indeed, he speaks of evolution as a new story of the universe, namely, as a vast cosmological perspective that will resituate human meaning and direction in the context of four and a half billion years of earth history.¹⁶

Man, who has caused the environmental crisis, is the only creature who is responsible to this serious problem.

We live in a period when the human community is in search of new and sustaining relationships to the earth amidst an environmental crisis that threatens the very existence of all life-forms on the planet. While the particular causes and solutions of this crisis are being debated by scientists, economists, and policymakers, the facts of widespread destruction are causing alarm in many quarters. Indeed, from some perspectives the future of human life itself appears threatened. All strategists and scientists are aware of the problem. They have alarmed the danger and given solutions and have asked for implementation of serious decisions. No doubt seeking the rational and scientific solutions which are very important and any instruction is of great value, but it must be known that the benefit seeking of a small minority of the whole world community who seek their own benefits do not permit any serious solution to be implemented. It is believed that besides all rational and scientific solutions, which are very important in their own places, the general attitude toward the world, human beings, and nature is of great importance in using and consuming the natural resources.



While in western humanistic philosophy, man is everything and considered to be in the center of world, and everybody seeks his own benefit and tries to get it, ignoring anything else, there is a Divine philosophy of life, which looks at men as responsible and effective beings in the world. For them, all natural resources are God's creature and considered to belong to all human beings, for now and ever. That is why they consider themselves responsible for protecting the natural environment.

This philosophy of life helps to shape our attitudes toward nature in both conscious and unconscious ways. It provides basic interpretive stories of who we are, what nature is, where we have come from, and where we are going. This comprises a worldview of a society. It also suggest how we should treat other humans and how we should relate to nature. It make up the ethical orientation of a society. It thus generates worldviews and ethics which underlie fundamental attitudes and values of different cultures and societies.¹⁷

This philosophy of life expects human beings to conserve the environment for several reasons which may be summarized as follows:

-According to this philosophy of life the very stuff of the Universe has a sacred aspect. The cosmos speaks to man and all of its phenomena contain meaning. They are symbols of a higher degree of reality, which the cosmic domain at once veils and reveals. The very structure of the cosmos contains a spiritual message for man and is thereby a revelation coming from the same source as religion itself.¹⁸ Both are the manifestations of the Universal Intellect, the Logos, and the cosmos itself is an integral part of that total Universe of meaning in which man lives and dies. For those who have this philosophy, nature is never only "natural"; it is always fraught with sacred value. This is easy to understand, for the cosmos is a divine creation; coming from the hands of the gods, the world is impregnated with sacredness.¹⁹

-In this philosophy of life, all people must try to understand, think of and sympathize with one another. According to it, man should believe that he is not the only the owner of everything, and he should not forget that all human beings for now and ever, are the partners in using and benefiting the world resources. He is not allowed to destroy the resources but he should use them in a legal and logical way. That is why he considers himself responsible for protecting the natural environment.

-According to this philosophy, humans are expected to protect the environment since no other creature is able to perform this task. Humans are the only being that God has "entrusted" with the responsibility of looking after the earth. This trusteeship is seen by Islam to be so onerous and burdensome that no other creature would 'accept' it.²⁰ Accordingly, not every human can claim this appointment, only those who are aware of this caring pact of respect for life can claim it.

-It considers that all the creatures in the universe have their own lives, their own procreation, their own language and mode of communicating, and their own senses, which are particular to each kind of creature. So each of them glorifies and worships its Lord in its own special way.²¹



-The living things, which are present in nature, are partners to man in existence, and they deserve their own respect and have their own positions. They have been created for man, and without them, it would not be possible for man to live. How could it not be so, when vegetations are the chief producers of oxygen which humanity relies on for breathing?

-It is necessary for man to realize that there are restrictions and rules for the preservation of the environment, so that it can protect it from the behavior and the stupidity of some of the people, who treat it with ignorance and irresponsibility.

-The earth is our first mother, on it we live, and from the bounties on it we eat, therefore, it has certain rights over us; of these rights is making it come alive with green vegetation and other plant life, and in encouragement to this the Prophet Mohammad (peace and blessings upon him) said that one who revives dead land, the land becomes his (that is if some one plants on barren land which was not owned by anybody, and is not being used, he will have legal title to this land), and whatever eats from it causes a reward from God for the cultivator of the land.²² In another tradition: "Whoever, revives a piece of land not belonging to anybody, becomes most worthy to own it."²³

-This philosophy of life has also indicated the good in planting and cultivation.²⁴ Prophet Mohammad (peace and blessings upon him) says that any Muslim who plants or cultivates vegetation and eats from it, or another person, animal or bird, eats from it will receive a reward for it from Allah. He (Peace and blessings upon him) also said that anyone who plants a tree under which people seek shade or shelter from the sun would have his reward with Allah. Therefore, the cutting down of trees without strong and legitimate reasons is encroaching on the bounties of Allah, and encroaching on the beauty of the environment which Allah has created.

-The earth is made available for human use, without abuse or misuse. The circle of things available for the benefit of humanity is much greater than that of the environment. There are numerous verses in the Qura'n that could be cited in this respect, but it suffices to mention three of them: "And He has subjected to you, as from Him, all that is in the heavens and on earth: behold, in that there are Signs indeed for those who reflect."²⁵

-The environment is perceived as the place where the signs (e.g. rivers, plants, and birds), pointing to God exist.²⁶ As a result, any destruction occurring to the environment is tantamount to destroying these signs. If any species becomes extinct, it is considered a loss of a Sign that reflects the greatness of the Creator. It is indeed a very sad thing if we continue to destroy the environment, because we will prevent the generations to come from having a healthy relationship with the environment, where "healthy" means the chance to experience these signs.

-This philosophy of life is established on the concept of good. Therefore, it is expected that it will protect the environment once it is understood that such protection is good by itself. The Qura'n states that: "He whoso do good, an atom's weight, will see it. And whoso does ill, an atom's weight will see it."²⁷ According to it, all human's relationships have to be based on the concept of justice, and kindness, and not on material or economical gain.²⁸



Conclusion

As mentioned before, we live in a period when the human community is in search of new and sustaining relationships to the earth amidst an environmental crisis that threatens the very existence of all life forms on the planet. Man, who has caused the environmental crisis, is the only creature who is responsible to this serious problem.

As discussed in this essay. What people do about their environment depends on what they think about themselves in relation to things around them. It is considered that way of thinking or the philosophy of life is the main factor of this situation.

According to this attitude, man should not consider himself as the center of the world to exploit all resources for his benefit, but man is a creature who should act wisely to protect all living resources for himself, other creatures and coming generations.

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PROCEEDINGS

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THE EFFECTS OF SOME PESTICIDES ON *VERTICILLIUM LECANII* (ZIMMERMAN) VIÉGAS

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To determine their effects on *Verticillium lecanii* (Zimmerman) Viégas, 5 pesticides (Sulphur WP, Endosulfan EC, Abamectin EC, Vertalec and Mycotal) were studied under laboratory conditions. The experiment was carried out in a randomized complete block design. Hazelnut shoots, 25 to 30 cm long and with big buds and scale insects, were placed in jars and sprayed with a hand sprayer. The big bud mites and *V. lecanii*-infected scales were counted on randomly chosen scales of big buds before treatment and 7 days after treatment. Data were then subjected to analysis of variance. In addition, the number of scale insects infected by *V. lecanii* was counted on the shoots 7 days after treatment. Means were compared by using Duncan's multiple range test which determined that the pesticides did not significantly affect *V. lecanii* development. In fact, Sulphur and Endosulfan positively affected *V. lecanii* infestation. Infected mites inside the big buds and scale insects were covered with the white mycelial mat of the fungus.

Key words: *Big bud mites, biological control, entomopathogenic fungi, Lecanicillium muscarium, Lecanicillium longisporum, Sulphur, organic agriculture*

INTRODUCTION

Turkey is one of the few countries with a favourable climate for the large scale production of hazelnuts (*Corylus avellana* Linne). It produces approximately 70.5% of the world's hazelnuts (Bozoglu, 2002). The big bud mites *Phytoptus avellanae* Nalepa (Acari: Phytoptidae) and *Cecidophyopsis vermiformis* (Nalepa) (Acari: Eriophyidae) cause significant yield loss world-wide. *Phytoptus avellanae* is one of the most important hazelnut pests by causing big bud formation (Arzone, 1975; Krantz, 1979; Ozman, 1995; Ozman and Ecevit, 1996a; Ozman and Toros, 1996, 1997a,b,c; Stamenkovic *et al.*, 1997; Ozman, 2000; Ozman and Cobanoglu, 2001). Sulphur 80% WP and Endosulfan 35% EC are both effective pesticides against big bud mites (Ozman-Sullivan and Akca, 2005). Sulphur is naturally occurring in the environment, is of low toxicity, and poses very little, if any risk to human and animal health and the environment (<http://www.soilassociation.org/web/sa/saweb.nsf/ed0930aa86103d8380256aa70054918d/67fd448ec064361080257149004cb42d>). Sulphur is mainly used as a fungicide to control fungal diseases and may also be used to control insect pests, especially in organic farming. Ozman and Ecevit (1996b) investigated the effects of nine pesticides on predacious mites, and only Sulphur was not harmful. In contrast, Endosulfan has major environmental impacts. It has also been used for more than 40 years against big bud mites, which may cause the development of resistance in insects and mites (Pesante, 1961; Krozal, 1964; Vidal-Barraquer *et al.*, 1966; Fabregat and Del Rivero, 1968). Arzone (1975) and Minetti *et al.* (1986) stated that Endosulfan is very toxic to entomophagous insects. Therefore, Sulphur is recommended in preference to Endosulfan. A single application of Sulphur 80% WP (400 g/100 l) at the end of April or beginning of May, just before the peak migration period of the mites from old big



buds to new buds, is very effective in keeping mite and big bud numbers low (Ozman-Sullivan and Akca, 2005).

Verticillium lecanii (Zimmerman) Viégas (Hyphomycetes, Deuteromycotina) (reclassified in part as *Lecanicillium muscarium* (Petch) Zare and W. Gams, 2001 and *Lecanicillium longisporum* (Petch) Zare and W. Gams, 2001) is an entomopathogenic fungus which has a wide host range, including insects, mites, spiders, nematodes and phyto-pathogenic fungi (Zare and Gams, 2001, 2003a,b). It has been successfully used in the biological control of various pests, such as white flies, aphids, scale insects, thrips and mites (Brady, 1979; Hall, 1981a,b; Askary *et al.*, 1998; Zare and Gams, 2001; Cuthbertson *et al.*, 2005). *Verticillium lecanii* sensu stricto (= *Lecanicillium lecanii* (Zimmerman) Zare and W. Gams, 2001) is specific scale pathogen which has to date been isolated from countries including the USA, Jamaica, the Dominican Republic, Peru, Turkey, Sri Lanka, West Indies and Indonesia (Zare and Gams, 2001, 2003c). In all cases, it was associated with Coccidae, and most probably in all cases the insect was the soft scale insect *Coccus viridis* (Green) (Personal communication with Dr. Rasoul Zare). *Verticillium lecanii* is naturally present in the Black Sea Region where it infects big bud mites and the scale insects *Parthenolecanium corni* Bouche and *P. rufulum* (Cockerell), on hazelnut bushes (Levendoglu, 1956; Duzgunes, 1958; Iren, 1970; Isik *et al.*, 1983; Anonymous, 1995; Ozman, 1995, 1998; Ozman and Hatat, 1999). Mites inside the big buds and scale insects are often covered with the white mycelial mat of the fungus. Especially in spring, *V. lecanii* kills eggs, nymphs and adults of the mites and scale insects, and can cause 100% mortality (Levendoglu, 1956; Duzgunes, 1958; Ozman, 1998; Ozman and Hatat, 1999). Insect pathogenic fungi can be negatively affected by the toxicity of agrochemicals. Many in-vitro studies have demonstrated that some pesticides restrict or prevent growth, sporulation and germination of entomopathogenic fungi. Several studies have been carried out to assess the effects of pesticides on entomopathogenous fungi because insect pathogenic fungi are generally used in combination with a variety of compounds for pest treatments (Olmert and Kenneth, 1974; Hall, 1981b; Vanninen and Hokkanen, 1988; Majchrowicz and Poprawski, 1993; Saito and Yabuta, 1996; Kikuchi and Satoh, 1998; Cuthbertson *et al.*, 2005; Tkaczuk and Mietkiewski, 2005). Among pesticides, fungicides are likely to have the most serious impact on entomopathogenic fungi (Majchrowicz and Poprawski, 1993). Therefore, this study aimed to determine the effects of Sulphur and other pesticides on naturally-occurring *V. lecanii*.

MATERIALS AND METHODS

During the migration period of the big bud mites at the beginning of May, experiments were carried out in the laboratory at the Plant Protection Department of Ondokuz Mayıs University, Samsun, Turkey. Hazelnut shoots, 25 to 30 cm long and with big buds and scale insects, were collected from the Giresun province of the Black Sea region of Turkey. The shoots were placed in jars in water, and the jars covered by plastic bags with perforations to allow some ventilation. The experiment was arranged in a randomized complete block design with 6 treatments and 4 replications, and with 3 big buds and more than 50 scale insects on the shoots within each replication. Five pesticides (Sulphur WP, Endosulfan EC, Abamectin EC, and two *Verticillium lecanii* spore powders – Vertalec and Mycotal) were used at their registered application rates, with water as a control (Table 1). Addit, which can enhance the activity of “Mycotal” at low humidities, was added as an adjuvant to Mycotal at 250 ml/100 l water, as per the manufacturer’s instructions.



Vertalec and Mycotal, which are identified as *Verticillium lecanii* on product labels, are commercial formulations of *Lecanicillium lecanii* and *L. muscarium* used against aphid and whitefly, respectively (Hall, 1984; Cuthbertson *et al.*, 2005). The pesticides were applied with a hand sprayer. The shoots were covered with pesticide to the point of run-off. All experiments were conducted in a growth room at 25 ± 1 °C, 16:8 (L:D) photoperiod, and 55% average daily relative humidity. The relative humidity in the jars was measured with a digital thermo-hygrometer and ranged between 71.0% and 76.6%. The Mites and scale insects were counted under a stereo-microscope.

Table 1. The pesticides used in the experiments.

Common name	Commercial name	Active ingredient (g/l, %)	Company name	Dosage/100 l water)
Sulphur	Sulphure 80 WP	80%	Kimyagerler	400 g
Endosulfan	Hektionex 36 EC	360 g/l	Hektas	150 cc
Abamectin	Agrimec EC	18 g/l	Syngenta	25 ml
<i>Verticillium lecanii</i> (spore powder)	Vertalec WP	2.5%	Koppert	200 g
<i>Verticillium lecanii</i> (spore powder)	Mycotal WP	16.1%	Koppert	100 g

All active stages of the mites were counted on approximately 0.2 cm^2 surface area (as observed under the microscope at 40x magnification) of randomly chosen outer, middle and inner big bud scales before treatment and 7 days after treatment. Data were analysed using the Henderson-Tilton formula to evaluate the effects of pesticides on the mites. The data were then set in a factorial design with pesticides and big bud scale's position as variables, and subjected to analysis of variance. Randomly chosen outer, middle and inner scales were also checked for *V. lecanii* infestation before treatment and 7 days after treatment, since it was impossible to directly count the big bud mites infected by *V. lecanii*.

The big bud scales infected by the fungus were calculated as a percentage (%). This data was also set in a factorial design with three variables - time, pesticide and big bud scale's position. Since there were some cases of no infection on any of the three scales, the data were scored as follows: 0%=1, 33.33%=2, 66.66%=3, 100%=4, and then subjected to analysis of variance. Means were compared by using Duncan's multiple range test.

Furthermore, the number of scale insects infected by *V. lecanii* was counted on the shoots 7 days after the treatment and calculated as a percentage (%). Covariance was employed because of the different number of samples (n). Means were then compared by using Duncan's multiple range test.

RESULTS AND DISCUSSION

The pesticides were highly effective against big bud mites, with mortality varying between 96.19 and 99.81% (Table 2). Sulphure and Hektionex were the most effective, but there were no significant differences among the pesticides. The position of the big bud scales was also not significant to the pesticides efficacy (%).



Table 2. The efficacy of some pesticides against *Phytoptus avellanae* and *Cecidophyopsis vermiformis* on big bud scales (%).

Pesticides	Big bud scales			\bar{x}
	Outer scale	Middle scale	Inner scale	
Sulphure	99.50	99.97	99.95	99.81
Hektionex	99.00	99.70	100.00	99.57
Agrimec	100.00	95.02	96.99	97.34
Vertalec	93.35	96.04	99.17	96.19
Mycotal	99.48	97.97	99.45	98.97
\bar{x}	98.27	97.74	99.11	

The effects of different variables on *V. lecanii* infection on the mites on the big bud scales are given in Table 3. There were significant differences among the pesticides ($P < 0.05$) and scale positions ($P < 0.05$), and a highly significant difference between the times ($P < 0.01$) for *V. lecanii* infection. *Verticillium lecanii* infections were similar for Sulphure, Hektionex, Agrimec, Mycotal and the control, varying between 40.28% and 51.38%. The infection percentage was lowest for Vertalec. Time from just before the treatment to 7 days after the treatment was significant for the fungal infection on the scales. While percentage of the scales infected with *V. lecanii* was 19.90% before the treatment, it was 68.05% 7 days after the treatment, showing a highly significant difference. Considering scale position, the percentage of scales infected with *V. lecanii* was between 39.58% and 52.08%. There was a significant difference between the outer and the other scales. Table 2 shows that the big bud scale's position was not important to the pesticides efficacy for the mites, but that the outer scales had a higher fungal infection percentage than the other scales. This may demonstrate that infection sources are from the outside and are not affected by the pesticides.

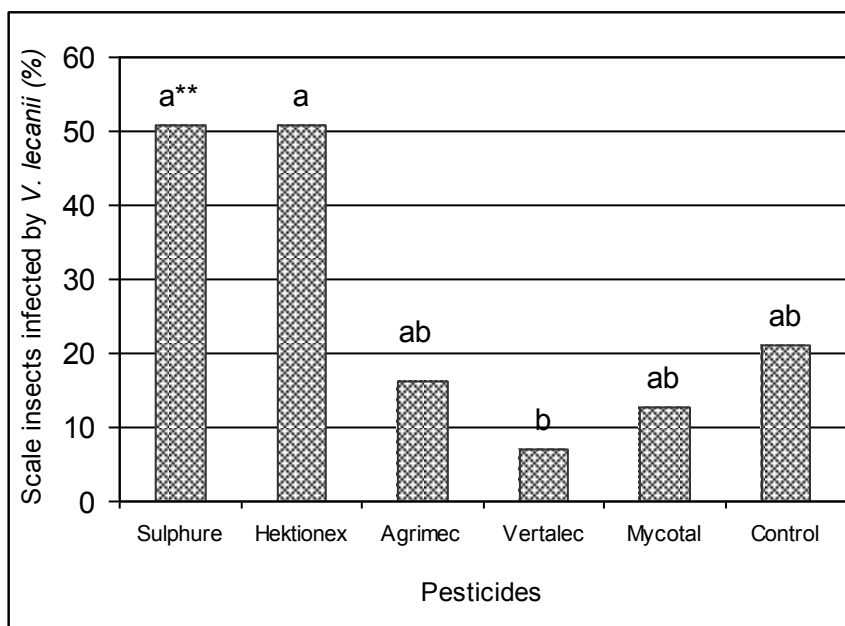


Table 3. The effects of three variables on *Verticillium lecanii* infection on big bud mites on big bud scales (%)^A.

Pesticides	Before treatment			Time x pesticide	After treatment			Time x pesticide	Pesticides *
	Outer	Middle	Inner		Outer	Middle	Inner		
Sulphure	16.66	16.66	16.66	16.66	83.33	91.66	75.00	83.33	50.00 a
Hektione x	41.66	8.33	16.66	22.22	83.33	66.66	58.33	69.44	45.83 a
Agrimec	33.33	25.00	16.66	25.00	91.66	66.66	58.33	72.22	48.61 a
Vertalec	16.66	0.00	0.00	5.56	55.33	41.66	50.00	50.00	27.78 b
Mycotal	33.33	16.66	25.00	25.00	83.33	75.00	75.00	77.77	51.38 a
Control	33.33	8.33	33.33	25.00	50.00	66.66	50.00	55.55	40.28 ab
Time x bud scale	29.16	12.50	18.05		75.00	68.05	61.11		
Time**				19.90 b				68.05 a	
Bud scale*	Outer= 52.08 a			Middle= 40.28 b			Inner= 39.58 b		

^AMeans in columns and rows followed by the same letter are not significantly different (*P<0.05, **P<0.01).

The percentages of scale insects infected by *V. lecanii* after pesticide treatments are shown in Figure 1. After the treatments, the percentages of scale insect with *V. lecanii* infection varied between 6.94% and 50.88%. The effects of the pesticides on the percentages of scale insects infected with *V. lecanii* were highly significant (P<0.01) (Figure 1). The infected scale insect percentages were highest for Hektionex and Sulphure, which positively affected the infestation percentage, possibly through post-mortem infection. The infection was 21.16% for the control, which was higher than for Agrimec and Mycotal, and Vertalec which showed the lowest value.



**Means with the same letter are not significantly different ($P < 0.01$).

Figure 1. Scale insects infected by *Verticillium lecanii* after pesticide treatments (%).

This study showed that the pesticides did not negatively affect *V. lecanii* development. In fact, the fungus developed very well, and the white mycelia of the fungus completely covered big bud mites on some outer scales and scale insects which had been sprayed with Sulphure and Hektionex. Sulphur is an essential nutrient for all living organisms (<http://www.soilassociation.org/web/sa/saweb.nsf/ed0930aa86103d8380256aa70054918d/67fd448ec064361080257149004cb42d>). The fungus may have been using sulphur as a nutrient.

It may have been anticipated that the fungal infestation on the mites on the big bud scales and on the scale insects which were sprayed by Vertalec and Mycotal would have the highest percentage, since they are *V. lecanii* spore products. However, environmental factors are strong determinants of their efficacy. Hyphomycete fungi such as *V. lecanii* and *Beauveria bassiana* (Balsamo) Vuillemin require several days of high humidity for sporulation and infection (Kim *et al.*, 2001). *Verticillium lecanii* works best at temperatures of 15 to 25 °C, and a relative humidity of 85 to 90%. It needs high humidity for at least 10 to 12 hours after application (<http://www.entomology.wisc.edu/mbcn/kyf612.html>). In the current study, Vertalec showed the lowest efficacy for the fungal infection on big bud mites on the scales (Table 3). The percentage of scale insects infected by *V. lecanii* was also the lowest for Vertalec (Figure 1). During the experiments, the relative humidity in the jars was between 71.0 and 76.6%. This lower RH may have negatively affected the germination of the spores and subsequent growth of the fungal spores in Vertalec. Mycotal showed a higher efficacy than Vertalec. That result may have been due to including Addit in the Mycotal spray mixture. In contrast, *V. lecanii* occurring naturally on the mites in the big buds and on the scale insects may not have been affected by the low RH, since they are more protected from RH fluctuations. In big buds and under scale insects, there are suitable microclimates and abundant food substrates for fungal growth.



The current results cannot be strictly compared with those of previous studies due to the differences in the pesticides tested, the dosage rates, the methods of testing, and the species and strains of the fungi. However, comparisons are still useful. Compatibility studies of *V. lecanii* with pesticides in agar media showed that spore germination and mycelial growth were minimally affected by Benomyl, Cypermethrin, Fenbutatin-oxide, Formothion, Mevinphos, Copper-oxychloride, Oxamyl, Permethrin, Pirimicarb, Thiophanate-methyl and Triadimefon at the recommended and sub-lethal concentrations. Fenithrothion, Mancozeb and Methomyl proved partially incompatible, while Metiram, Bitertanol and Dichlofluanid were completely incompatible (Hall, 1981b; Khalil *et al.*, 1985). Hall (1981b) also reported that Carbaryl was not dangerous to the fungus *V. lecanii*, as was observed for the pesticides in the current study. Landa (1983) indicated that Cypermethrin showed only weak inhibition of *V. lecanii*, as was the case with Permethrin, Formothion, Mevinphos, Oxamyl, Pirimicarb and Pirimiphos-methyl.

The effects of fungicides (including Sulphur) and bactericides on *V. lecanii* were evaluated in the laboratory on agar plates and on the larvae of *Trialeurodes vaporariorum* (Westwood). As was observed in the current study, Sulphur was harmless to the conidial germination of the fungus on agar. It also did not affect the mortality of larvae when included in an inoculum with a conidial suspension, and was harmless to mycelial growth producing conidia on the surface of larvae killed by the fungus (Saito and Yabuta, 1996). Another study on the effect of fungicides on *V. lecanii* was done by Kikuchi and Satoh (1998). Three strains of *V. lecanii* were studied for the control of *Aphis gossypii* Glover and *T. vaporariorum* in greenhouses. Fungicides that had no effect on *V. lecanii* on culture media also had no effect on *V. lecanii* in greenhouse trials. When fungicides which had a strong effect on the culture media were applied within 3 days after application of *V. lecanii*, insect mortality attributable to *V. lecanii* was not seen. It was also observed that the three strains of the fungus were not affected differently by the fungicides.

The compatibility of *Lecanicillium muscarium* and insecticides (Imidacloprid, Buprofezin, Teflubenzuron, and Nicotine) used to control the second instar stages of the sweetpotato whitefly, *Bemisia tabaci* (Gennadius), was investigated by Cuthbertson *et al.* (2005). In contrast to the current study, all chemicals significantly reduced spore germination when compared to a water control. These differences may be attributable to the use of different chemicals.



De Oliveira and Neves (2004) investigated the in-vitro compatibility of the entomopathogenic fungus *B. bassiana* with twelve acaricide formulations, including Abamectin. The formulations affected conidial germination, vegetative growth and sporulation of the fungus to different extents. The formulations most compatible with the fungus were Abamectin and the pyrethroids. The effects of some acaricides, fungicides, insecticides and herbicides on *Metarhizium anisopliae* Metsch. (Sorokin) were studied in soil by measuring the reduction of CO₂ production. Except for the fungicides, no significant effect ($P>0.05$) of the pesticides on the fungus was observed at 4 days. Identical effects occurred for the acaricides Abamectin and Fenbutatin oxide, with a reduction in CO₂ production between 20 and 24 days (Mochi *et al.*, 2005). The effects of three SO₂ treatments and two fungicides (Propiconazole and Sulfur W80) on the mycoflora populations of ripening barley were determined. The fungicides reduced the population of *Auerobasidium pullulans* (de Barry) Arnaud. In contrast, SO₂ increased the population of the fungus (Magan and McLeod, 1991) as it was observed in the current study.

Taking a broader perspective, increasing numbers of hazelnut growers throughout the world are adopting IPM. However, considerable work still needs to be done in its development and implementation eg there are many beneficial insects, mites and entomopathogenic fungi living in hazelnut orchards (Iren, 1970; Ozman, 1995; Ecevit *et al.*, 1996; Ozman, 1998; Ozman and Hatat, 1999; Ozman and Cobanoglu, 2001; Cobanoglu and Ozman, 2002; Ozman, 2002; Ozman-Sullivan and Akca, 2005; Ozman *et al.*, 2005; Ozman-Sullivan, 2006). In particular, *V. lecanii* shows substantial potential as a biocontrol agent for big bud mites and scale insects. The current study showed that the use of Sulphur 80% WP against big bud mites does not negatively affect the development of *V. lecanii*. Therefore, Sulphur 80% WP can be safely used for the control of big bud mites. However, substantial work still needs to be done in the laboratory on the spore germination and mycelial growth of the species reclassified from *V. lecanii*, and their different strains.

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ENVIRONMENTAL GOVERNANCE FOR SUSTAINABLE AGRICULTURE WITH SPECIAL REFERENCE TO PUBLIC HEALTH: A CRITICAL REVIEW

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The present day agriculture system consumes fossil fuel, water, and topsoil at unsustainable rates. It contributes to numerous forms of environmental degradation, including air and water pollution, soil depletion, diminishing biodiversity, and fish die-offs. This creates environmental and public health concerns, including pollution from the high concentration of animal wastes and the extensive use of antibiotics, which may compromise their effectiveness in medical use. At the consumption end, animal fat is implicated in many of the chronic degenerative diseases that afflict industrial and newly industrializing societies, particularly cardiovascular disease and some cancers. The pesticides used heavily in industrial agriculture are associated with elevated cancer risks for workers and consumers and are coming under greater scrutiny for their links to endocrine disruption and reproductive dysfunction. In this review, we outlined the environmental and human health problems associated with current food production practices and discuss how these systems could be made more sustainable?

Key words: *Environment, Health, Sustainable Agriculture, Pesticides, Chemicals*

Introduction

Present day agriculture views the farm as a factory with "inputs" (such as pesticides, feed, fertilizer, and fuel) and "outputs" (wheat, corn, chickens, and so forth). The goal is to increase yield per acre and decrease costs of production, usually by exploiting economies. It depends on expensive inputs from off the farm (e.g., pesticides and fertilizer), many of which generate wastes that harm the environment. The following environmental and public health concerns are associated with the prevailing production methods:

- Monocultures are eroding biodiversity among both plants and animals.
- Synthetic chemical pesticides and fertilizers are polluting soil, water, and air, harming both the environment and human health.
- Soil is eroding much faster than it can be replenished-taking with it the land's fertility and nutrients that nourish both plants and those who eat them.
- Water is consumed at unsustainable rates in many agricultural areas.

Sustainable agriculture systems are based on relatively small, profitable farms that use fewer off-farm inputs, integrate animal and plant production, maintain a higher biotic diversity, emphasize technologies that are appropriate for the production. Sustainable systems involve less reliance on chemical inputs which affect environment and ultimately the society.

In this paper, we use examples from around the globe to illustrate our view points about worst scenarios of unsustainable agriculture. The type of agriculture that has become conventional throughout the industrialized world is, in historical terms, a new phenomenon. Humans have practiced agriculture for more than 10,000 years, but only in the past 50 years or so farmers have become heavily dependent on synthetic chemical fertilizers and pesticides and fossil fuel-powered farm machinery.



This has substantially increased crop yields through high-yielding plant varieties, mechanization, and synthetic chemical inputs. For example, farmers in Pakistan are getting yield of wheat more than 40 kg/ acre which is two to three time more than in fifties. Similarly in USA farmers were producing 30 bushels of corn per acre in 1920 (Anonymous, 1936), whereas in 1999 yields averaged about 134 bushels per acre, which is an increase of almost 350% (Anonymous, 2000c)

The higher yields of agriculture come at the great expense of environment. Low prices at the grocery store give us a false sense that our food comes cheap, but they do not include the cost of cleaning up farm pollution, for example, or the cost of vast government subsidies to agriculture. In 1996, the U.S. government spent \$68.7 billion on agricultural subsidies, which translates into \$259 per consumer (Myers, 1998).

In this paper we first outline the environmental and public health problems associated with our current agricultural system, then we will discuss how a sustainable agriculture can address these issues?

Agriculture and the Environment

Fertilizers. Between 1950 and 1998, worldwide use of fertilizers increased more than 10-fold overall and more than 4-fold per person (Anonymous, 1953). Tilman (1998) estimated that crops actually absorb only one-third to one-half of the nitrogen applied to farmland as fertilizer. Nitrogen that runs off croplands into the Mississippi River and its tributaries has been implicated as a major cause of a "dead zone" in the Gulf of Mexico (Rabalais et al. 1996). This zone suffers from hypoxia a dearth of dissolved oxygen (< 2 mg/L). Excess nutrients fuel algal blooms by speeding up the algae's growth and decay cycle. This depletes oxygen in the water, killing off immobile bottom dwellers and driving off mobile sea life such as fish and shrimp. In 1999, the Gulf's dead zone grew to 20,000 km² (about the area of New Jersey), its largest recorded size (Simpson, 2001).

Excess nitrogen in soil can lead to less diversity of plant species, as well as reduced production of biomass. Additionally, some ecologists contend that this decrease in diversity makes the ecosystem more susceptible to drought (Vitousek, 1997). Chemical fertilizers can gradually increase the acidity of the soil until it begins to impede plant growth (Barak et al. 1998). Chemically fertilized fields also show less biological activity in the soil food web (the microscopic organisms that make up the soil ecosystem) than do plots fertilized organically with manure or other biologic sources of fertility (Raupp, 1997).

Pesticides. Each year the world uses about 3 million tons of pesticides (comprising herbicides, insecticides, and fungicides), formulated from about 1,600 different chemicals. Some of the increase in pesticide use can be attributed to mono cropping practices, which make crops more vulnerable to pests. In Pakistan the big chunk of pesticides is applied in cotton only which makes the pests to become more resistant against pesticides, ultimately increase in the number of sprays is in progress (Figure 1). In the United States, insecticide use increased 10-fold between 1945 and 1989 (Pimentel et al. 1991). The worst scenario of pesticides is the lacking of complete toxicity data.

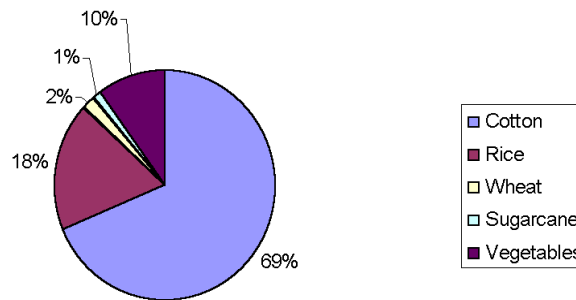


Figure 1. Crop wise use of pesticides in Pakistan

According to Pimentel et al. (1991) it has been estimated that only 0.1% of applied pesticides reach the target pests, leaving the bulk of the pesticides (99.9%) to impact the environment. That environmental impact can include widespread decline in bird and beneficial insect populations (Suhail and Ahmed, 2003). This can disrupt the balance between predator and prey because pests often recover faster from pesticide applications than do the predators that normally keep pest populations under control. Pesticide runoff and airborne pesticide "drift" pollute surface waters and groundwater (Suhail and Ahmed, 2003).

Some of the more disturbing findings on pesticide impact are as follows:

- ***Decline in the pollinators:*** The number of honeybee colonies are on sharp decline in the world owing to pesticides. For example in Murree (Pakistan) sharp decline of *Apis cerana* was observed owing to injudicious use of pesticides particularly in 70's and 80's to curb codling moth etc. In U.S.A. honeybees dropped from 4.4 million in 1985 to < 1.9 million in 1997, due to direct and indirect effects of pesticides. Exposure to pesticides can weaken honeybees' immune systems--making them more vulnerable to natural enemies such as mites and can also disrupt their reproduction and development (Nabhan and O'Brien, 1998; Daily, 1997). Honeybees are involved in the pollination of at least \$10 billion worth of U.S. crops (Raloff, 1996), providing farmers with an essential "natural service" (Suhail and Ahmed, 2003).
- ***Deformities/ abnormalities:*** A study in Quebec (Canada) suggests a link between pesticides and developmental abnormalities in amphibians. Among other deformities, researchers observed frogs with extra legs growing from their abdomens and backs or fused hind legs (Ouellet et al. 1997).
- ***Disrupting immune system:*** Because of the widespread use of pesticides, many target species whether insects or plants develop resistance to the chemicals used against them (Suhail and Ahmed, 2003). The number of insect species known to display pesticide resistance has increased from < 20 in 1950 to > 500 as of 1990. Meanwhile, scientists have identified 273 plant species that exhibit herbicide resistance (Steingraber, 1997; Anonymous, 1996b).



Soil. Land degradation and in particular, the deterioration of soils is one of the most serious challenges facing humankind as it attempts to feed a growing population. It takes anywhere from 20 to 1,000 years for a centimeter of soil to form (McMichael, 1993). Oldman et al. (1991) estimated that since World War II, poor farming practices had damaged about 550 million hectares--an area equivalent to 38% of all farmland in use today. Most of the world's arable land either is in use for agriculture or has been used up by (unsustainable) agriculture (Pimentel and Pimentel, 1996). The world's supply of arable land per person has been declining steadily (Figure 2).

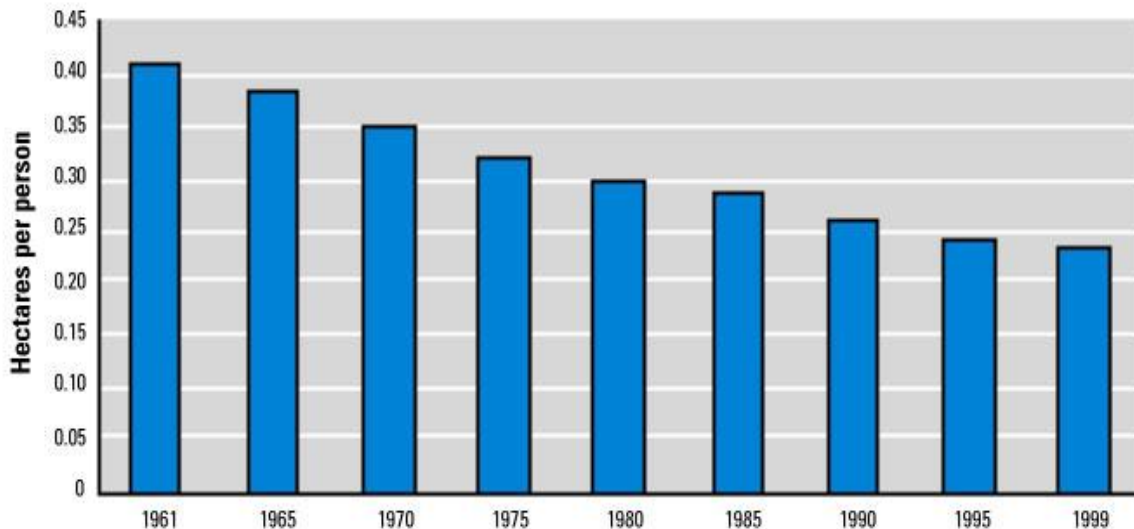


Figure 2. Average number of hectares of arable land per person, worldwide (Anonymous, 2001a).

An extreme example of land degradation is the phenomenon known as desertification, which the United Nations has defined as "land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities" (Mouat, et al. 1997). The annual global cost of desertification has been roughly estimated at \$42.3 billion (Anonymous, 1991b). Desertification reduces the amount of land available for agriculture. Unsustainable agriculture contribute directly to desertification through poor agricultural practices such as over cultivation, overgrazing, and overuse of water, and indirectly when land is deforested to create new cropland or new pastures for livestock. According to Bright (1997) almost 20 million km², or 15% of the all land surface, may already be experiencing some degree of desertification.

Water. Agriculture affects water resources in two ways: irrigating fields using surface waters or aquifers diverts water from other potential uses; and when farming practices pollute surface waters and aquifers, they reduce the amount of water that is suitable for other uses. It is blamed that current farming practices for 70% of the pollution in rivers and streams. It is because of the runoff of chemicals, silt, and animal waste from farmland which has polluted more than 173,000 miles of waterways in USA alone (Cook, 1998).



Agriculture accounts for about two-thirds of all water use worldwide (Postel, 1996), far exceeding industrial and municipal use (Figure 3). In many parts of the world, irrigation is depleting underground aquifers faster than they can be recharged. In other cases, agriculture depends upon "fossil aquifers" that mostly contain water from the last ice age. These ancient aquifers receive little or no recharge, so any agriculture that depends upon them is inherently unsustainable.

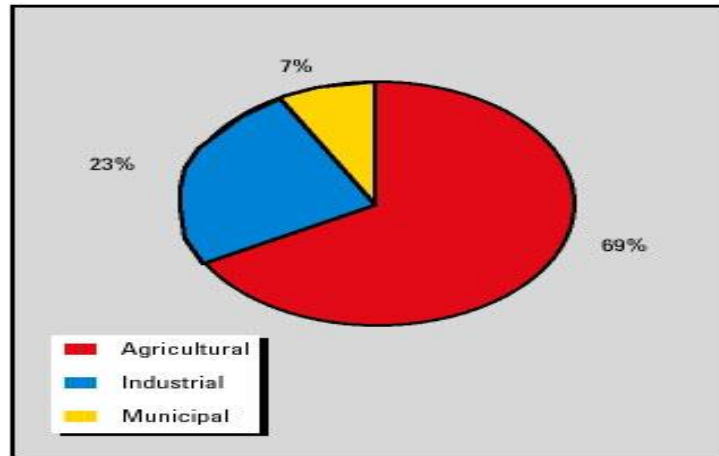


Figure 3. Global water use, by sector, based on 1990 figures (Postel, 1996).

Irrigation has been used to turn many low-rainfall regions into agricultural wonders at least in the short term. One third of all the food we grow comes from the one-sixth of cropland that is irrigated (Hillel, 1991). However, excessive irrigation can exact an ecologic price, through water logging and Salinization. Irrigation water leaves behind salts that slowly diminish the soil's productivity. The Food and Agriculture Organization of the United Nations (FAO) estimates that about 13% of the world's irrigated land is either waterlogged or excessively salty, and another 33% is affected to some degree (Anonymous, 1995). Salinization affects 28% of the irrigated land in the United States and 23% in China (Anonymous, 1991a). According to hydrologist Hillel (1991), many of the problems with irrigation arise from careless practices such as over watering. He advocates modernizing the irrigation systems in developing countries, where the most acute irrigation problems exist. Water use in irrigation is extremely inefficient, according to FAO estimates; the crops use only 45% of irrigation water (Anonymous, 1991a). In the case of China's Yellow River, only 30% of the water extracted for irrigation actually reaches crops (Anonymous, 1998a). In Pakistan water loss is also on increase till reaching the fields at tail.

Biodiversity. Agriculture is dependent on biodiversity for its existence and, at the same time, is a threat to biodiversity in its implementation. One way that agriculture depends on biodiversity is in developing new varieties of plants that keep pace with ever-evolving plant diseases. When plant breeders need to find a resistance gene to improve a domestic variety, they sometimes cross-breed the variety with a wild relative. However, because they are under pressure to bring a product to market quickly, plant breeders usually search for a single gene that confers resistance. This practice is risky according to Fowler and Mooney (1990). It may have taken thousands of years for a wild plant to develop its complex of resistance genes, but modern plant breeding methods are chipping away at this natural resource at a rate beyond nature's ability to replenish it (Myers, 1983).



The practice of mono-cropping or monoculture (planting the same crop over a large land area) creates greater necessity for quick-cure plant breeding. Insect pests and plant diseases are both aided by mono-cropping if a crop variety that may be susceptible to a plant disease or insect pest is planted contiguously and in great volume (Suhail and Ahmed, 2003).

Industrial agriculture erodes biodiversity not only because it favors monocultures but also because those monocultures replace diverse habitats. One example is the way rice monocultures crowd out local wild varieties. In the Philippines, Indonesia, and some other developing countries, more than 80% of farmers now plant modern rice varieties. In Indonesia, this led to the recent extinction of 1,500 local rice varieties in just 15 years (Anonymous, 1992b).

Another threat to biodiversity is the continued consolidation of the seed industry and the effect it is having on the availability of non hybrid plant varieties. As of 1998, the 10 largest seed companies controlled 30% of the global market (Anonymous, 2000a). Large seed companies tend to rely on first-generation hybrids because they force growers to buy new seed every year. As the industry has consolidated, traditional varieties have been removed from seed catalogs at an alarming rate (Horriggan, 2002)

The dependence of industrial agriculture on synthetic chemicals has reduced biodiversity in the insect world, as well. Pesticides kill wild bees and other beneficial species that are non target victims (Suhail and Ahmed, 2003). Excessive fertilizer use also reduces biodiversity because of the effect that nitrogen runoff is having on ecosystem balance. A minority of species can thrive in high-nitrogen environments, and these sometimes crowd out all other species in the ecosystem (Moffat, 1998).

Global warming and climate change. Agriculture is directly responsible for about 20% of human-generated emissions of greenhouse gases, according to estimates by the Intergovernmental Panel on Climate Change. Changes in land use contribute about 14% of the total human-generated emissions of greenhouse gases, and much of this is for agricultural purposes (Rosenzweig and Hillel 1998).

Genetically engineered crops. Genetically engineered crops have been on the market only since 1996, but already they occupy 130 million acres worldwide, including a 19% increase in acreage in 2001 (James, 2001). Transgenic crops have been defined as genetically engineered to contain traits from unrelated organisms. In traditional plant breeding, a desired trait must be obtained from a closely related species that will breed with that plant through natural mechanisms, but genetic engineers can search for the desired trait anywhere in the plant or animal kingdom (Rissler and Mellon, 1996).



Introducing genes into crops in this novel way raises ethical, environmental, and health concerns. The environmental concerns raised by genetically engineered crops include the following:

- Gene transfer to wild relatives: Herbicide-resistance genes engineered into crops can spread to wild relatives of those crops and could create super-weeds and make weed control more difficult" (Anonymous, 1999).
- Increased herbicide use: The most common reason for manipulating crop genes is to confer resistance to commercial herbicides. Increased use of genetically engineered crops of this sort will likely be accompanied by increased use of the relevant herbicides (Anonymous, 1999). Weeds would therefore be exposed to more herbicide, helping them develop herbicide resistance more rapidly.
- Insect resistance to *Bacillus thuringiensis* (Bt) toxin: The second most popular reason for genetically engineering crops is to give them resistance to insects, viruses, and fungi. Genetic engineers have produced insect resistance in corn, rice, cotton, tobacco, and many other crops by introducing a gene that produces the *Bt* toxin. In other words, the plant gives off its own pesticide, so farmers do not need to apply pesticides. In nature, the soil bacterium *B. thuringiensis* produces the *Bt* toxin. The widespread use of *Bt* crops would in all likelihood hasten the development of *Bt* resistance in insects that are currently vulnerable to this natural pest control method. This would eliminate an important organic pest control method often used by organic growers as a last resort (Rissler and Mellon, 1996). *Bt* crops may also pose risks for non target species. Two recent studies reported that pollen from *Bt* corn can be deadly for monarch butterfly larvae (Hansen and Obrycki, 2001; Losey et al. 1999).

Impacts of Unsustainable Agriculture on Environment and Health

The preceding section describes the environmental harms caused by unsustainable agricultural system. Among the problems are the following:

- Animal-based foods contribute to chronic diseases like avian influenza.
- Pesticide residues enter our bodies through air, water, and food and raise risks for certain cancers as well as reproductive and endocrine system disorders.
- Concentrated, high-speed meat production leads to a greater risk from food borne pathogens, some of them newly emerging.
- Excessive use of antibiotics in animal agriculture may create resistant strains of microbes in humans.

Diet and Disease. Under nutrition is still common in developing countries (affecting about 800 million people worldwide), while in affluent countries the main causes of death are associated with over nutrition. According to World Health Organization (WHO) estimates that > 40% of children (or 230 million) in poor countries are stunted by under nutrition (de Onis et al. 2001).



Cardiovascular disease. It is the leading cause of death in many countries, and one of the major risk factors is a high cholesterol level in the blood. The human body manufactures all the cholesterol it needs, and any cholesterol acquired through diet comes from animal foods because plant foods contain no cholesterol (Anonymous, 1996). Consumption of animal foods elevates a person's cholesterol level, and this in turn elevates the person's risk for heart attack, stroke, and arterial disease. Whereas the average cholesterol level among heart attack victims is 244 mg/dL of blood serum, heart attack risk falls to virtually zero when the cholesterol level is less than 150 mg/dL (Castelli, 1984).

Cancer. Diets that are high in fat and low in fiber are associated with an increased risk of colon cancer (White and Frank, 1994). In addition to being high in fat, meat and dairy products contain no fiber. In contrast, many epidemiologic studies have found that high fiber intake leads to lower risk of not only colon cancer but also breast and prostate cancer (White and Frank, 1994). Prostate cancer has been linked to high intakes of calories, total fat, and milk, meat, and poultry (Hebert et al. 1998). Lung cancer is also less prevalent in vegetarians, even when one controls for the effects of smoking (Colditz et al. 1987). Countries with high rates of fat consumption have the highest breast and colon cancer mortality, whereas the lowest death rates from these diseases occur in populations with the lowest levels of fat consumption (Lan and Carpenter, 1987).

Diabetes. Vegetarians have lower rates of these risk factors as compared to non vegetarians (White and Frank, 1994). Treatment programs for diabetics now recommend drastic reductions in consumption of meat, dairy products, and oils but increased consumption of grains, legumes, and vegetables.

Pesticides and Health

Pesticides produce both short and long term effects on human health (Suhail and Ahmed, 2003). The United Nations has estimated that about 2 million poisonings and 10,000 deaths occur each year from pesticides, with about three-fourths of these occurring in developing countries (Quijano et al. 1993). The long-term effects of pesticides include elevated cancer risks and disruption of the body's reproductive, immune, endocrine, and nervous systems (Suhail and Ahmed, 2003). Population-based studies have shown associations between certain types of pesticide and certain cancers (Table 1).

Table 1. Association between various classes of pesticides and various forms of cancer (Blair and Zahm, 1995).

<i>Class of Pesticides</i>	<i>Cancer</i>
Phenxyacetic acid herbicides	Non- Hodgkin's lymphoma, soft tissue sarcoma, prostate
Organochlorine insecticides	Leukemia, Non- Hodgkin's lymphoma, soft tissue sarcoma, pancreas, lung, breast
Organophosphate insecticides	Non- Hodgkin's lymphoma, Leukemia
Arsenical insecticides	Lung, skin
Triazine herbicides	ovary



Pesticides can suppress the immune system (Suhail and Ahmed, 2003). In a report, Repetto and Baliga (1996) cite epidemiologic evidence of an association between pesticide exposure and increased incidence of human disease, particularly those diseases to which immune compromised individuals are especially prone.

The list of pesticides that are suspected endocrine disruptors includes atrazine and alachlor. Many pesticides have not been tested for their toxicity, and testing in the past has focused on acute effects rather than long-term effects. The data required for complete health hazard evaluations is available only for 10% of pesticides (Anonymous, 1984).

Human exposure to pesticides can come through residues in food either on or within fruits and vegetables, or in the tissues of fish and animals we eat through contaminated drinking water, and through the air we breathe (Suhail and Ahmed, 2003).

Some pesticides accumulate up the food chain, or "bio-accumulate" (Suhail and Ahmed, 2003). A 1967 study found that DDT levels were 20,000 times higher in one fish species than they were in the surrounding sea water (Woodwell et al. 1967). So, when humans eat foods higher on the food chain (more meat, milk, cheese, and eggs and fewer plant foods), they increase their exposure to bio-accumulated pesticides (Suhail and Ahmed, 2003).

Food System and Public Health

The production and processing of food are increasingly concentrated (fewer owners and larger operations), automated, and fast-paced, which has implications for public health. Among the major problems:

- Pollution from factory farms is harming the health of both workers and residents living downstream or downwind from these operations.
- New strains of food borne pathogens (e.g., *Listeria* and toxigenic *Escherichia coli*) have emerged in recent years, and long recognized pathogens have been causing more widespread harm.
- The non medical use of antibiotics in animal agriculture may be threatening the effectiveness of antibiotics in treating human disease by creating selective pressure for the emergence of antibiotic-resistant bacteria.
- Genetically engineered foods present risks of new allergens in the food supply and may be harmful to immune systems and vital organs.
- These phenomena are due, in part, to production and processing methods that emphasize economic efficiency but do not give sufficient priority to public health or the environment (Horrigan, 2002)

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Food borne pathogens. Much less common but more deadly than the bacteria are the newly emerging strains of toxigenic *E. coli* and *Listeria*. These put the annual disease burden for *E. coli* at about 62,000 illnesses and 50 deaths, and blames *Listeria* for about 2,500 illnesses and 500 deaths (Mead et al. 1999). Infection with the entero- hemorrhagic strain of *E. coli* (O157:H7) was first discovered in 1975. The pathogen causes bloody diarrhea and acute renal failure and is sometimes fatal; children and the elderly are at greatest risk. *E. coli* O157:H7 is most often spread by undercooked beef or raw milk (Cliver, 1990). Infections with *Listeria* can cause abortion and stillbirth, and blood poisoning or meningitis in infants and immune-deficient persons. *Listeria* is most often associated with consumption of certain dairy products and processed meats (Anonymous, 1992a).



Antibiotics in animal agriculture. Seventy percent of U.S.-produced antibiotics are fed to animals to promote growth (Mellon et al. 2001). Excessive use of such drugs in animals can enhance the development of drug-resistant strains of disease, which can then be transmitted to humans through the food supply. Same is true in case of oxy-toxin in Pakistan which is usually used by the farmers before milking, causing severe health problems including early maturity in children. There is a link between the use of antibiotics in food animals, the development of bacterial resistance to these drugs, and human diseases. The WHO has called for reduced use of antibiotics in animal agriculture. Resistant strains of *Salmonella*, *Campylobacter*, *Enterococci*, and *E. coli* have been transmitted from animals to humans (Anonymous, 1997).

Genetically engineered foods. Only recently have genetically engineered foods been introduced into the human food supply. One of the concerns surrounding genetic engineering of foods is that new allergens could be introduced into the food supply because the sources for genetically engineered material may include organisms not previously eaten by humans (Anonymous, 2000b). In addition, it will be harder for people with food allergies to avoid consuming an offending food if proteins from that food are integrated into a food to which they are not allergic. For example, soybeans that were genetically engineered to contain proteins from Brazil nuts caused reactions in individuals who were allergic to Brazil nuts (Nordlee et al. 1996).

Environment Governance and Sustainable Agriculture

Unsustainability in agriculture is not a new issue. Large civilizations have risen on the strength of their agriculture and subsequently collapsed because their farming methods had eroded the natural resource base (Ponting, 1992). Today's conventional or industrial agriculture is considered unsustainable because it is similarly eroding natural resources faster than the environment can regenerate them and because it depends heavily on resources that are nonrenewable (e.g., fossil fuels and fossil aquifers).

One of the goals of the sustainable agriculture movement is to create farming systems that mitigate or eliminate environmental harms associated with industrial agriculture. Sustainable agriculture is part of a larger movement toward sustainable development, which recognizes that natural resources are finite, acknowledges limits on economic growth, and encourages equity in resource allocation.

Sustainable agriculture gives due consideration to long-term interests (e.g., preserving topsoil, biodiversity, and rural communities) rather than only short-term interests such as profit. Sustainable agriculture is also place specific. For example, a farming system that is sustainable in a high-rainfall area may not be sustainable in an arid climate. Sustainable agriculture is dynamic, meaning that it must evolve to respond to changes in its physical environment or its social or economic context. Sustainable agriculture is holistic in that it takes a system wide approach to solving farm management problems, and also because it places farming within a social context and within the context of the entire food system.



Sustainable agriculture has been defined in several ways, for example:

- Sustainable agriculture integrates three main goals: environmental health, economic profitability, and social and economic equity. Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs (Anonymous, 2001b).
- Sustainable agriculture is a model of social and economic organization based on an equitable and participatory vision of development which recognizes the environment and natural resources as the foundation of economic activity. Agriculture is sustainable when it is ecologically sound, economically viable, socially just, culturally appropriate, and based on a holistic scientific approach (Madden and Chaplowe, 1997).
- Sustainable agriculture does not refer to a prescribed set of practices. Instead, it challenges producers to think about the long-term implications of practices and the broad interactions and dynamics of agricultural systems. It also invites consumers to get more involved in agriculture by learning more about and becoming active participants in their food systems.

Sustainable methods. Although no one set of farming practices constitutes sustainable agriculture, we briefly describe here certain methods that enhance sustainability.

- **Crop rotation.** By rotating two or more crops in a field, farmers interrupt pests' reproductive cycles and reduce the need for pest control (Corselius et al. 2001). Rotations sometimes reduce the need for added fertilizer because one crop provides nutrients for the next crop.
- **Cover crops.** Cover crops are planted to improve soil quality, prevent soil erosion, and minimize weed growth. Some cover crops can also generate income.
- **No-till and low-till farming.** These farming systems are based on the premise that minimizing disturbances to the soil will increase the retention of water, nutrients, and the topsoil itself.
- **Soil management.** Good stewardship of the soil involves managing its chemical, biological, and physical properties. Industrial agriculture has tended to emphasize the chemical properties of soil, to the detriment of the other two. An acre of healthy soil can contain 4 tons of organisms, which make up the soil's ecosystem (Brunetti, 1999). Organic matter and compost are food for beneficial bacteria, fungi, nematodes, and protozoa. If managed properly, these soil organisms perform vital functions that aid in plant growth. Healthy soil produces plants that are more vigorous and therefore less susceptible to pests.
- **Diversity.** Growing a variety of crops provides a buffer against both ecologic and economic problems. Monocultures are more vulnerable to pests as well as to fluctuations in market price. Crop variety can also create more niches for beneficial insects.
- **Nutrient management.** After monitoring the soil content of nitrogen and other nutrients, farmers can prevent runoff into adjacent waters and also save money on purchased fertilizers by applying only what the plants and soil can absorb, with no excess.
- **Integrated pest management.** An integrated pest management (IPM) system prefers biological methods and uses (least-toxic) chemical pesticides only as a last resort. To keep destructive insects under control, an IPM emphasizes crop rotations, intercropping, and other methods of disrupting pest cycles, as well as plant varieties that have high resistance to pests. IPM also uses insect predators, as well as biopesticides such as *Bt* (Alexandratos, 1995).
- **Rotational grazing.** By continually moving animals to different grazing areas, rotational grazing prevents soil erosion by maintaining sufficient vegetative cover. It also saves on feed costs, averts the manure buildup of concentrated animal feeding operations, and contributes to soil fertility.



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MONITORING OF CHLORINATED HYDROCARBON POLLUTION OF ENVIRONMENT AND ANIMALS IN ALBANIA

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The discovery of insecticidal properties of chlorinated hydrocarbon (HCH) including Lindane before 1945, had immediate consequences and introduced the era of synthetic insecticides. It brought a remarkable impact in agriculture, public and animal health. However, using of them without any criteria, brought about their demise because of their persistence in the environment, biomagnification in animals and within various food chain.

Pesticides were produced in our country, as well. Meanwhile, their production were banned until the start of the '90s, there were remained large wastes represent a serious threat to the environment and public health. The area of former Chemical Plant of Durres, in which until '90s was produced Lindane (γ -HCH) represents one of the "hot spots" of Albania.

The main objective of the present investigation was the monitoring of HCH levels, their presence's evaluation in water, blood and milk.

The study was carried out in Porto Romano area (Durres), during April - December 2005. 10 groundwater were taken from pre-selected private dug wells located within the plant Lindane site and it was analyzed with an atomic absorber technique.

There were studied 25 blood samples: 10 samples from cattle, 10 samples from sheep and 5 samples from dogs, selected randomly in area. Blood samples were taken from jugularis vein, in unconservant test-tubes to quantify HCH in it. All of them were analyzed with GC-ECD technique in Institute of Public Health (IPH). The blood was analyzed to quantify blood cells and to see leukocyte formula as well. The technique was standard hematological one. There were studied levels of HCH in 10 cow milk samples of animals breeding in area. They were analyzed with GC-ECD technique.

The level of HCH in water showed their total content from 3. 358 $\mu\text{g/L}$ up to 8. 366 $\mu\text{g/L}$. These levels mean the very high toxic substance concentrations. Values of δ isomer are in higher levels. More than 70% of blood samples demonstrated convincingly high level of HCH. Their quantities varied from non detectable (n.d) until 960. 87 $\mu\text{g/L}$. β isomer shows higher levels. 60% of blood smears showed a lymphocyte leucosis. The high levels of HCH and their isomers were found in milk. They varied from non detectable (n. d) till 2803. 56 $\mu\text{g/kg}$ in milk. β isomer shows higher levels as well as. Milk of these animals may be harmful to human consumers.

According to the results obtained through the analysis program, Porto Romano has to be considered one of the most critical polluted areas in Albania.

Environmental and animal contaminant monitoring also enable state agencies, NGO and ecologist organizations to detect levels of contamination in them and have to prepare national programs of area healthiness.

Key –words: *animal, HCH, water, blood, milk*



INTRODUCTION

Environmental pollution is an actual and very serious problem all over the world. Determination, in terms of both quantity and quality of residues of organochlorine insecticides in environment, animals and especially in foodstuff, is an immediate and very available duty to protect human health, animals and ecosystems that are on danger.

The discovery of organochlorine insecticides including Lindane, before 1945 brought immediate consequences and a direct impact in agriculture and veterinary fields. The application of them in different areas contributed to the persistence of these toxic substances in the environment, animals and the food chain as well.

During the last 50 years, it is written about biotransformation, environmental effects, and toxicity, etc of pesticides in environment, plants, animals and especially in man. Many studies have demonstrated the gradual accumulation of residues of these chemicals and their metabolites in body tissues as well as their slow elimination from system.

One of special features is their deposit in adipose tissue and humors of body. It is very important to underline these chemicals continue to be present in blood, milk and especially in adipose tissue for a long time. Animal fats, cow milk, butter and fish are the most important sources of food pollution. It is verified by recent researches these substances could be in high concentration in animal milk (Yeh CY, Kuo P.H., Tsai S.T., Wang GY, Wang Y.T., 2002). Water, animals and milk monitoring serves as an important indicator of contaminated animals and water quality problems.

Pesticides were produced in our country, as well. After '90s, their production were banned in Albania, but there were remained large wastes in the area representing a serious threat to the environment as well as to human health, especially the area of former Chemical Plant of Durres, which represents one of the "hot spots" of Albania. Some of them are presented in Fig. 1.

Porto Romano area was built up after '90s as an informal zone. There are more than 5,000 inhabitants live in. The families live in the area of the former Chemical Plant for several years (children were born there). The long-term damage is especially important in children, because of they consume milk and other contaminated foodstuffs, which can cause damages years later, perhaps even in the next generation. The families manage about 2500 domestic animals – such as cows, sheep etc around plant area. The domestic animals feed there and they are exposed to the probably contaminated soil and water, under this polluted environment (The study of UNEP about polluted zone in Albania (2000), Tafaj L., 2005). As a consequence humans and animals in this area are exposed to greater dietary levels of HCH. They are presented in animal body (adipose tissue and blood) and in their products such as milk, representing a threat for community.

Monitoring of the environment, animals and their products in Porto Romano area was the main objective of the present investigation. The main goal of it was to evaluate HCH pollution and its isomers in water, blood and milk, in order to detect the actual levels of contamination. Next goal was to establish whether HCH level differences between blood and milk were randomly or significant.

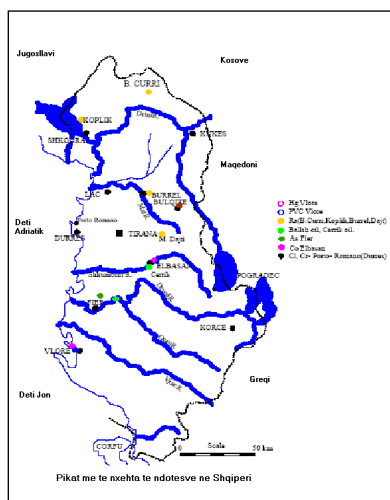


Fig.1 Hot Spots in Albania

MATERIALS AND METHODS

Samples and sampling

The study was carried out in Porto Romano area, during April - December 2005.

10 groundwater were taken from pre-selected private dug wells located within the plant Lindane site and the surrounding area. The water was analyzed with an atomic absorber technique (Arnold E. Greenberg, Lenore S. Clesceri & Andrew D. Eaton, 1992) and they were carried out at the Faculty of Natural Sciences.

There were studied 25 blood samples: 10 samples from cattle, 10 samples from sheep and 5 samples from dogs, selected randomly in area. Blood samples were taken from jugularis vein, in unconservant test-tubes to quantify HCH in it. All of them were analyzed with GC-ECD technique in IPH. The blood was taken in the same time in test-tube with EDTA to quantify blood cells and there was prepared smears to see leukocyte formula. We evaluated leucocytes/mm³ blood and the leucocytes formula. The technique was the standard hematological one. Analyzes were carried out at the FVM. There was studied HCH level in 10 cows' milk samples. They were taken by the same cows, blood of which was collected in. They were transported in glass bottles under the temperature 4 °C. For HCH analysis, they were washed with detergents and water, then with deionizer water, acetone and hexane of animals breeding in area. They were analyzed with GC-ECD technique in IPH.

The following pollutants were examined: HCH total and its isomers: alfa, beta, delta and gamma (Lindane) HCH. All analyzed were carried out in the IPH.



Methods

The samples were homogenised, extracted and purified according to The UNEP/FAO recommended method (Arnold E. Greenberg, Lenore S. Clesceri & Andrew D. Eaton, 1992, FAO). A known amount of purified extract was evaporated to dryness in a stream of nitrogen and then diluted in 1 mL hexane. The determination of chlorinated compounds was made using a ECD gas chromatograph. The following operating conditions were set for chromatography: column temperature: 200°C; temperature of detector 200°C; carrier gas (nitrogen) 120 ml/min; temperature of evaporated room 220°C (Lang V. J., (1992).

They were calculated by following formula:

$$\frac{\text{Mg sample}}{\text{Ml injected}} = \frac{a \times b}{334 \times V} = 1.8713 \text{ mg}$$

where: a = g sample

b = ml extract in ACN taken to analyze

334 = factor ACN/water

V = ml final extract

The concentrations of HCH were determined in samples using the external standard method, injecting standard mixture (0.02, 0.17, 0.34, 0.6 and 1 µg/mL analyt). The method used specifies that the accuracy of analytic procedure is satisfactory if the relative standard deviation (in g of analyte) per 1 kg sample (ppb) in five successive pollutant level determinations in the same basic sample does not exceed 20% of the average value. If the relative standard deviation is more than 20% of expected one, it is prepared a new curve of the average, which meets the required accuracy criteria.

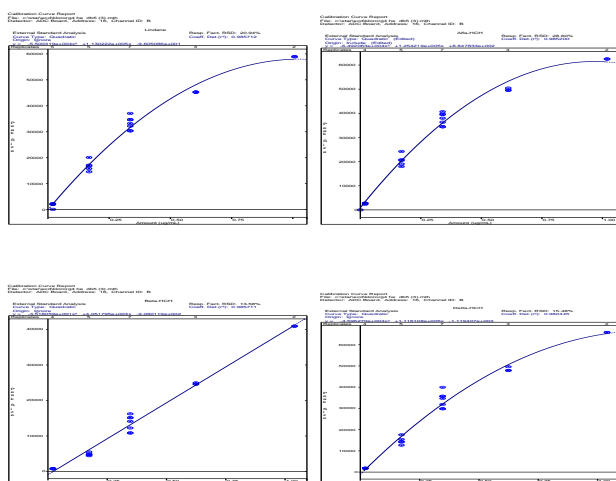


Fig. 2 Curbe of calibration of HCH isomers



RESULTS AND DISCUSSION

HCH were selected for their known properties of persistence, liposolubility and their bioaccumulation in environment, animals and their products such as milk (Kipcic, D., Vukusic, J., and Sebecic, B., 2002). They were selected as important indicators of contaminated environment.

1. Evaluation of HCH in waters

The results of water examinations are presented in Table 1 and Fig. 3.

Table 1. HCH level in well water ($\mu\text{g/L}$)

Nr. sample	α -HCH	β -HCH	γ -HCH Lindane	δ -HCB	Total HCH	Permitted HCH level in running water ($\mu\text{g/L}$)
samp.1	0.13	0.9	0.035	0.916	1.981	2
samp.2	0.009	0.004	0.011	0.002	0.026	2
samp.3	0.074	0.237	-	3.829	4.14	2
samp.4	n.d	n.d	n.d	n.d	n.d	2
samp.5	0.035	0.005	0.015	0.006	0.061	2
samp.6	0.025	0.012	n.d	0.003	0.040	2
samp.7	0.009	0.009	0.003	0.085	0.106	2
samp.8	0.029	n.d	0.121	3.208	3.358	2
samp.9	0.367	0.043	0.013	7.943	8.366	2
samp.10	0.098	0.004	0.008	0.124	0.234	2

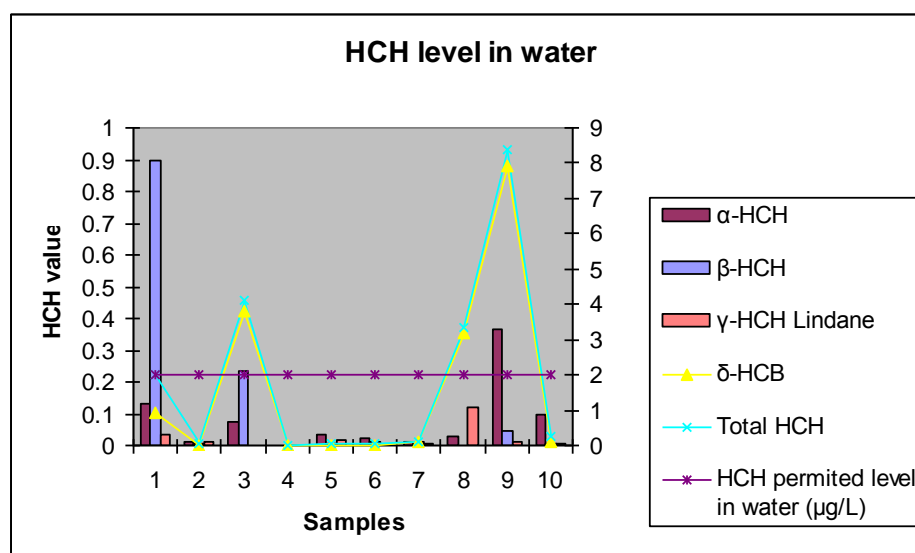


Fig. 3 HCH levels in running water ($\mu\text{g/L}$)



As can be seen in the Table 1 and Fig. 3, in sample 3 HCH level is 4.14 $\mu\text{g/L}$, sample 8 - 3.358 $\mu\text{g/L}$, sample 9 - 8.366 $\mu\text{g/L}$; that means the level of HCH ranges from 2- 4 times higher than allowed levels (allowed level in water - 2 $\mu\text{g/L}$). It is underlined that samples 3 and 9 are taken in area inside of enclosed wall. Different studies have shown that HCH level is higher in the ground of this area.

δ isomer has higher values than the others. This isomer has high resistance compared to α , β , and γ isomers. It is linked to quantity and distribution of HCH, the structure and permeability of the ground in Porto Romano. So if the area has superficial clayey stratum, it is less permeable and Lindane passes slowly in the underground waters, such as in Porto Romano.

2. Evaluation of HCH in blood

As can be seen in Table 2 and Fig. 4 and 5, it should be stressed that in about 70% of blood samples the levels of HCH were demonstrated. Their levels are several higher than the maximum allowed concentration limit approved by actual national and international acts (*Directive 86/363 EEC/24 July 1986, POPs and animals (2002; 0.001 ppm allowed limit in blood)*). Blood of the animals feed on next to the plant site have shown higher levels of HCH than the animals feed away former plant site and/or they breed in stable. As regards the levels of isomers in investigated samples, we found that they range: α -isomer – non detectable (n.d) to 62.66 $\mu\text{g/l}$; β – isomer: n.d to 826.49 $\mu\text{g/l}$; δ - isomer - n.d to 83.22 $\mu\text{g/l}$. β isomer shows higher levels (average 367.7 $\mu\text{g/l}$) exceeding the maximum allowance of 0.001 ppm.

On the one hand, biotransformation and elimination of α -HCH is relatively fast in animals, on the other hand β -HCH has a higher bioconcentration and its elimination is slower, compared with α and δ isomers. Lindan, the γ isomer of HCH, was far more interesting than the previous pollutants. In Albania, like in the other European countries and in the America, the use of Lindan is under no ban.

Above data are intended to show what the pollution trend might be in relation to animals and their products as well as whether all compounds examined displayed the same trend (*Kipicic, D., Vukusic, J., and Sebecic, B., 2002*). High levels of HCH in their blood means that animals are in risk and threat by wastes because of main way of taking of them is by means of food.

Table 2. Levels of HCH in blood ($\mu\text{g/L}$)

Samples	α HCH	β HCH	γ HCH	δ HCH	Total HCH
Sheep blood	62.66	549.2	n.d	49.21	661.07
Sheep blood	38.4	766.35	n.d	56.73	861.48
Sheep blood	25.44	459.9	n.d	39.29	524.63
Sheep blood	21.93	436.56	n.d	27.29	485.78
Sheep blood	51.16	826.49	n.d	83.22	960.87
Cow blood	16.08	296.78	n.d	31.22	344.08
Cow blood	22.05	342.43	n.d	26.85	389. 33
Cow blood	n.d	n.d	n.d	n.d	n.d
Cow blood	n.d	n.d	n.d	n.d	n.d
Cow blood	n.d	n.d	n.d	n.d	n.d

n.d-non detectable)

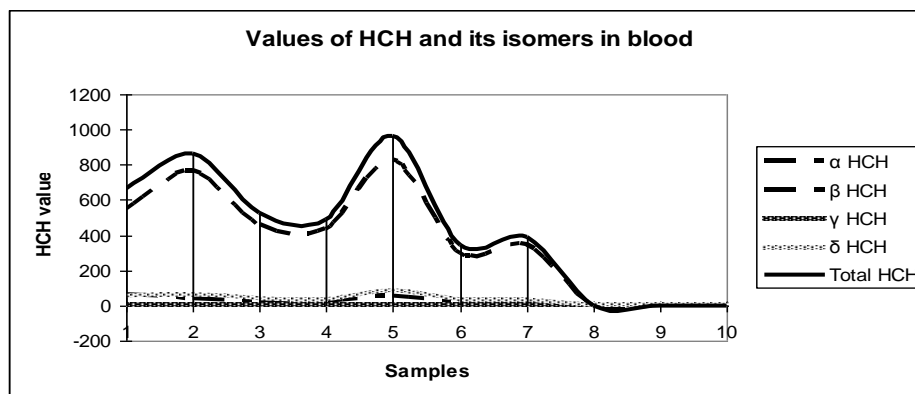


Fig. 4. Level of HCH and its isomers in blood

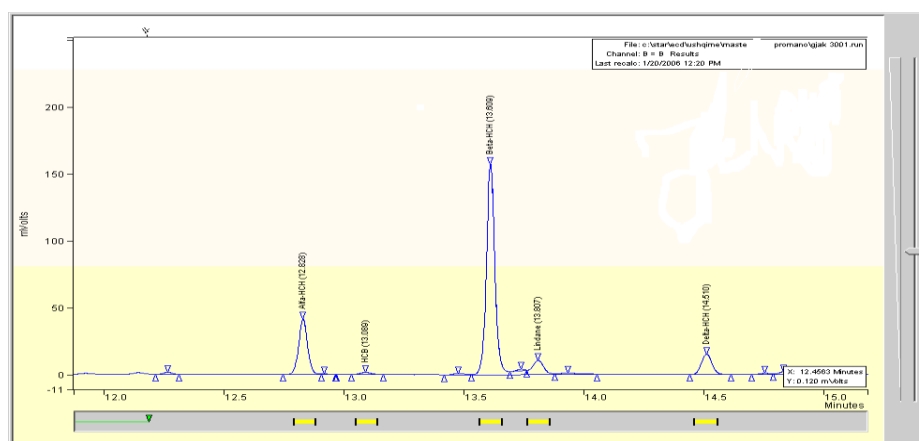


Fig. 5 Chromatographic profile of HCH isomers in blood

3. Evaluation of leucocytes and their formula

The results about leucocytes and their formula have presented in following tables and figures. There aren't differences in total number of leucocytes per mm³ of blood. Their values range in normal indices of species (Christopher A., (1969), Kaloyanova-Simeonova P. (1995) Luku S., (1988)

Percentage of lymphocytes is higher (80 – 90%) in animals their blood was analyzed. Their increase in blood is linked with presence of HCH in it (IARC, 1987). That means 60% of probability in increasing of lymphocytes may be caused by HCH in blood. The correlation formula is: $y = -2E - 0.9x^2 + 2E - 0.6x^2 + 0.0001x + 0.1984 = 0.9887$ (Fig. 6).

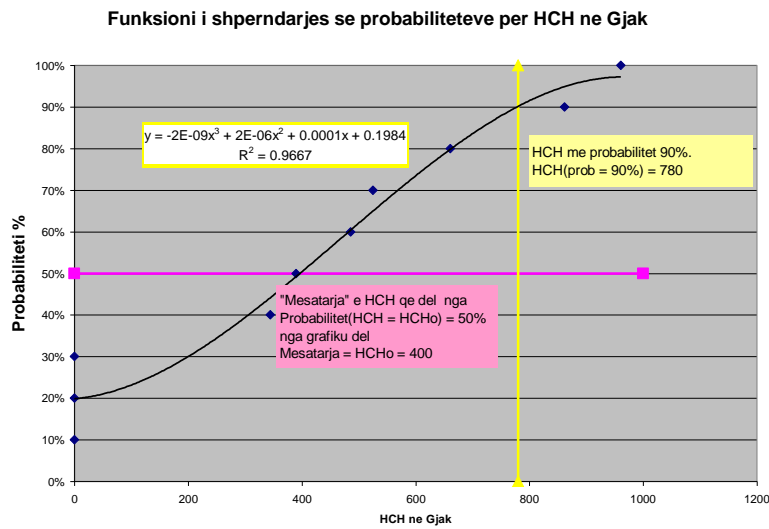


Fig. 6 Function of probabilities dispersion for HCH in blood

In contrarie, the evaluation of blood smears shows great differences in leucocyte formula (tables 3, 4, 5, fig. 8, 9, 10). These results can be permitted to classify their differences in two groups: the number of leucocytes; they are more evident differences. The second are hemomorphocytometric differences, especially the lymphocytes.

As can be seen in tables 60% of animals show a lymphocytosis, a lymphocytic leucocytosis (Fig. 7) (Kaloyanova-Simeonova P. (1995), Wing, M.G., 2000).

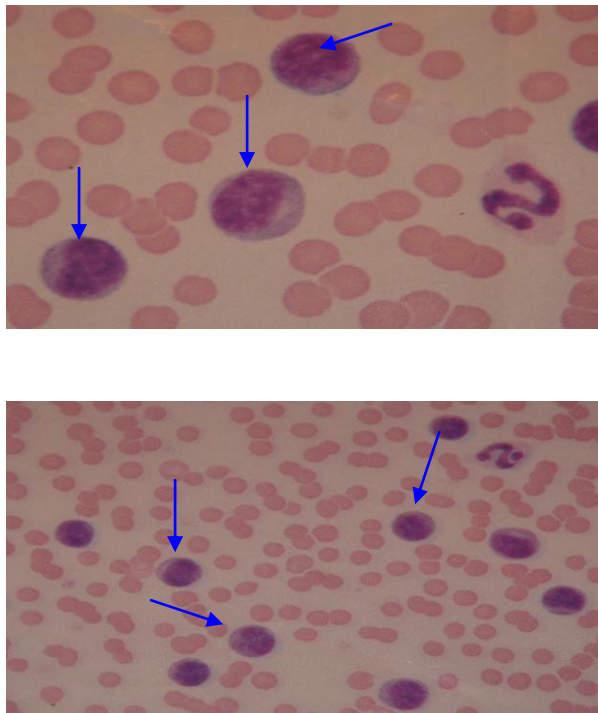


Fig. 7 Blood smears of cows with lymphocytosis



Hemomorphocytometric differences are the typical ones. There are atypical lymphocytes in peripheral blood, that means they are lymphoproliferated differences (arrowed cells). Blood smears of some samples show a chronic leukaemia. Eosionocytosis is evident in many of samples. Our opinion is that these evident differences are emphatic, characteristics, evaluated and they have an important diagnostic role (*Studimi i UNEP për zonat e ndotura në Shqipëri* (2000).; Pearce N. E., et al., 1987).

Table 3. Leucocytes formula in cows

Samples	Basophil. (%)	Eosinph. (%)	Neutroph (%)	Lymphc. (%)	Monocyt. (%)
1	0	6	28	65	1
2	0	14	15	70	1
3	0	4	25	70	1
4	0	2	33	65	0
5	0	5	20	75	0
6	0	26	24	50	0
7	0	3	22	74	1
8	0	5	39	54	2
9	0	1	18	80	1
10	0	2	22	76	0

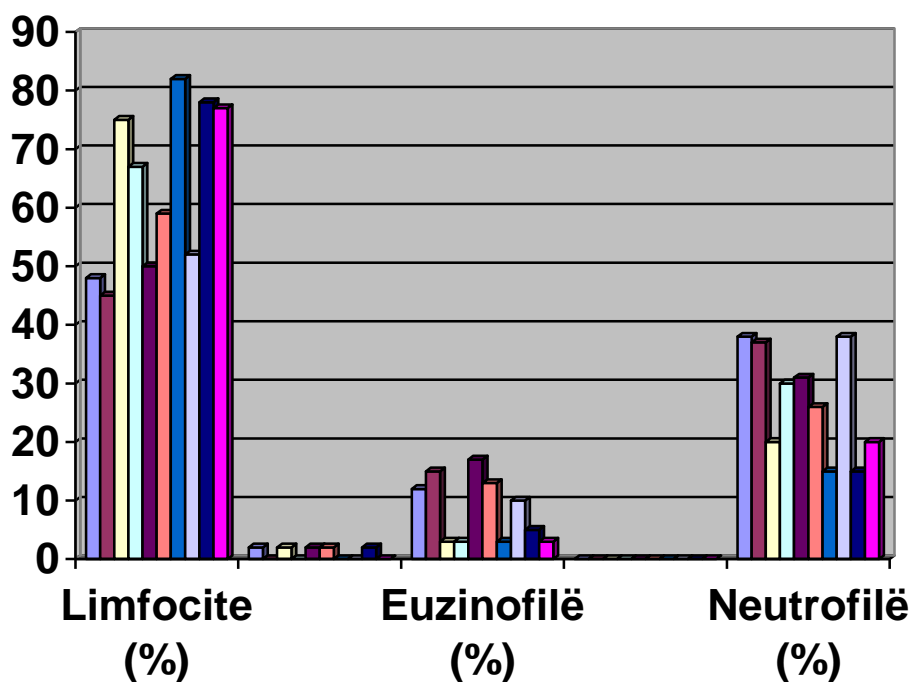


Fig. 8 Leucocytes formula in cows



Table 4 Leucocytes formula in sheep

Sample s	Basoph. %	Eosinoph. %	Neutroph. %	Lymphoc. %	Monocyt.%
1	0	12	38	48	2
2	0	15	37	45	0
3	0	3	20	75	2
4	0	3	30	67	0
5	0	17	31	50	2
6	0	13	26	59	2
7	0	3	15	82	0
8	0	10	38	52	0
9	0	5	15	78	2
10	0	3	20	77	0

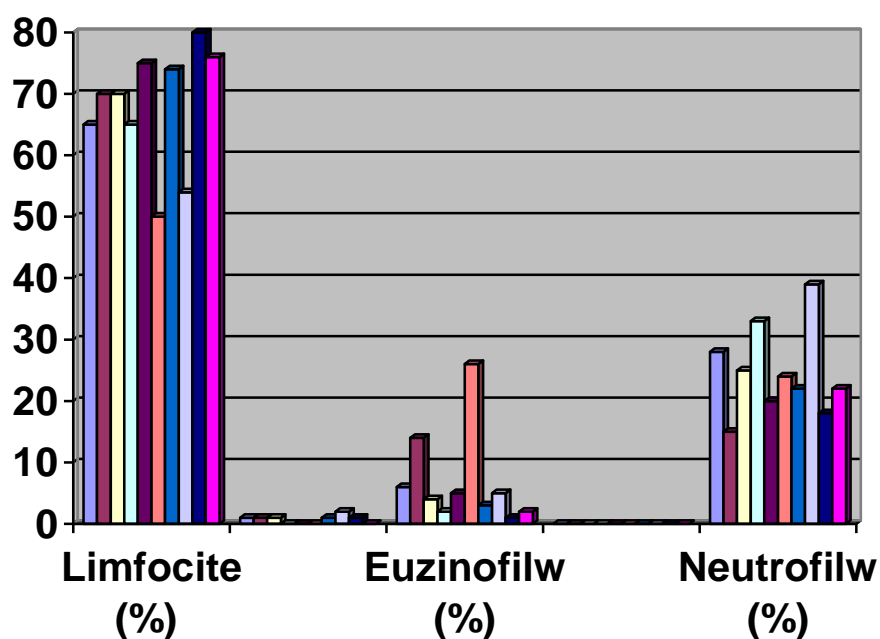


Fig. 9 Leucocytes formula in sheep

Table 5 Leucocytes formula in dog

Sample s	Basoph.%	Eosinoph %	Neutroph %	Lymphoc. %	Monoc %
1	0	6	15	77	2
2	0	3	16	80	1
3	0	8	29	63	0
4	0	4	22	72	2
5	0	4	25	70	1

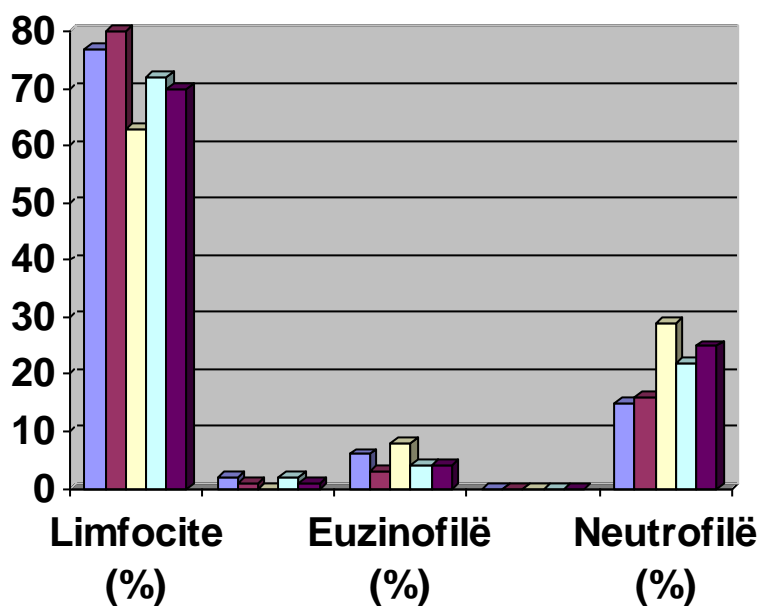


Fig. 10 Leucocytes formula in dogs

4. Evaluated of HCH in milk

As evident and in the literature, many chlorinated pesticides are found in cow's milk in Porto Romano (Table 6, Fig. 11, 12). The evaluation of milk has shown toxic remains of HCH in it. They are presented in most of examined samples. There were no HCH in some of them.

Table 6. Level of HCH ($\mu\text{g/kg}$) in milk

Sample Cow milk	α - HCH	β -HCH	γ - HCH	δ - HCH	Total-HCH
1.	n.d	n.d	n.d	n.d	n.d
2.	n.d	n.d	n.d	n.d	n.d
3.	59.94	655.47	n.d	18.33	733.74
4.	36.33	363.28	n.d	14.66	414.27
5.	34.45	321.24	23.12	54.76	433.57
6.	54.45	213.12	35.22	42.85	779.21
7.	364.48	2376.1	16.03	46.95	2803.56
8.	n.d	n.d	n.d	n.d	n.d
9.	n.d	n.d	n.d	n.d	n.d
10.	n.d	n.d	n.d	n.d	n.d

n.d-non dedected

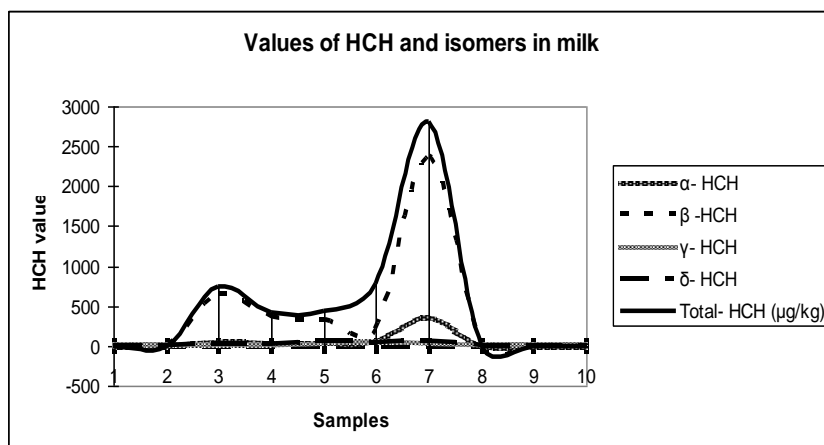


Fig. 11 Values of HCH in milk

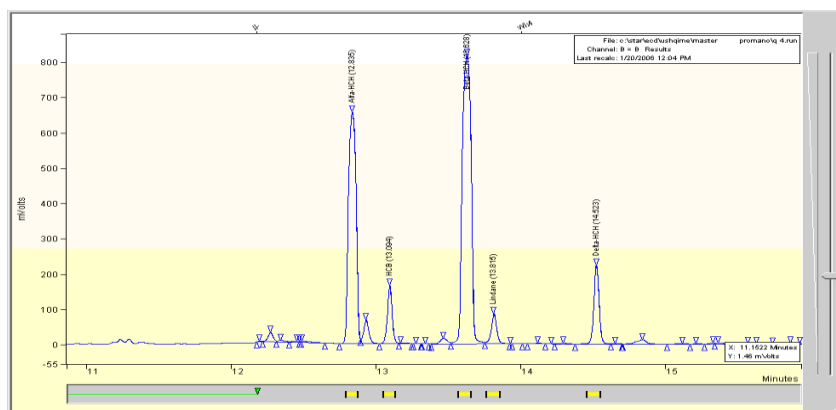


Fig. 12 Chromatographs of HCH isomer values in milk

Samples 3, 6, and 7, serum of which is examined as well as, confirmed that there is correlation between HCH isomers in blood and milk (Fig. 13) (*Procianoy R. S., 1981, WHO, 2002*).



FUNKSIONI I SHPERNDARJES se HCH Total ne Qumesht Lope

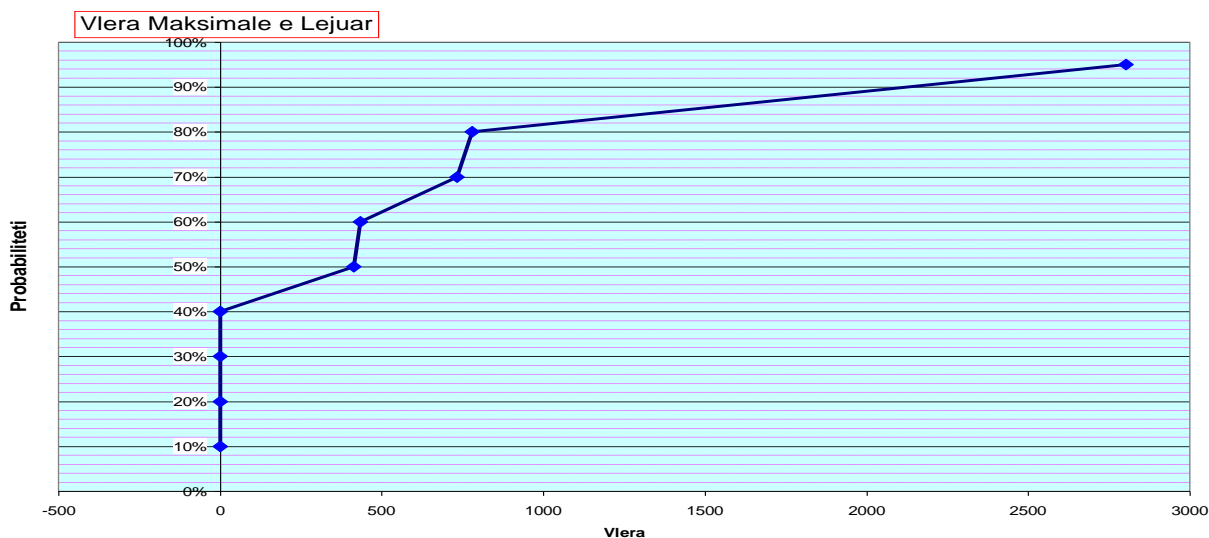


Fig. 13 Dispersed function of total HCH in milk

The most elevated concentrations of HCH have been detected at sample 7, especially α and β isomers. Their levels are many times higher than in other samples. Even with low concentration of pesticides in animal feed the milk may be heavily affected because liposoluble pesticides usually store in the animals body and can be detected in the milk in high level. Our study should confirm this.

Except other isomers, in samples 5, 6, 7 levels of γ isomer (Lindan) are detected. This is an example of handling the environment problems making long terms monitoring of food with the cooperation of the laboratory the agriculture and the industry.

The dairy cow is located near the top of the food chain and is known to concentrate HCH in the milk. This information brings into focus the importance of translocation and surface contamination of plants used for animal feed. The studies assume that we have milk residue data immediately after exposure has occurred (Procianoy R. S. 1981; Tafaj L. 2005).

Analyses in the Porto Romano area showed this zone faces a serious contamination caused by usage and unsuitable way of pesticide stockpiling.

The accumulation of high HCH serum levels means that animals are in threat, on the one hand, and on the other hand this accumulation should be a risk especially of children (Kaloyanova-Simeonova P. 1995).

Comparing the results of serum and milk, we have unfortunately detected high levels of HCH and its isomers. The identification of high levels of α isomer is a threat because of its carcinogen effect (WHO 2000).

The results of this study about high content of HCH and its isomers in milk have to be an alarming campane to interfere in protection of public health of area. It is obvious that the question is still matter of concern for our society and a call for the government through regional organizations.



CONCLUSION

- Levels of HCH are several higher than the maximum allowed concentration limit approved by actual national and international acts. It has shown high Lindane and HCH contamination values in water, animals' blood, and milk. Milk of these animals represents real danger as food source to community.
- More than 70% of blood samples demonstrated convincingly high level of HCH. Their quantities varied from non detectable (n.d) until 960.87 µg/L; β isomer shows higher levels. The high levels of HCH and its isomers were found in milk. They varied from non detectable (n. d) till 2803.56 µg/kg. β isomer shows higher levels as well as.
- According to the results obtained through the analysis program, Porto Romano has to be considered one of the most critical polluted areas in Albania.
- Environmental and animal contaminant monitoring also enable state agencies, NGO and ecologist organizations to detect levels of contamination in them and have to prepare national programs of area healthiness.

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MAIN ASPECTS OF RAW MILKS' QUALITY ORIGINALITY AND SAFETY IN ALBANIA

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The terms quality, safety and originality or authenticity are complement of each other, and they understand the absence of impurities, of pathogenic microorganisms and non original constituents. The total quality will means to evidence it throw the safety and nutritive value notion. To damage it, means to intervene to add, to remove or replace the natural constituent of an original milk, in order to defraud the consumers and to reduce the nutritive value.

Taking into consideration that our population consume mainly fresh milk and based on the above mentioned notions, we have chosen their significant indices to analyze. These indices are firstly the safety ones such as: the total mesophylic bacteria count, presence of coliforms/E. coli, detection of chemical residues such as the antibiotics and pesticides. Secondly the quality and nutritive value indices: detection of added water- cryoscopic point, protein content ect.

Methods used for samples examination are accurate tests, based on standard methodic of official organisms such as AOAC, IDF. It has been examined a considerable amount of raw milks' samples from farmers of most important dairy plants areas in Albania, for a period of four months in 2005 year. During the period of this study it has been noticed that there is a problem dealing the quality, safety and authenticity in dairy products. All organisms working in agro processing should make efforts to improve the food quality, implementing the food quality management system.

Keywords : *quality, safety, raw milk, authenticity, total count bacteria, coliforms, pesticides cryoscopy.*



INTRODUCTION

In our country people usually consume fresh milk and rarely use reconstructed milk or imitation products. There are the fully capacities in Albania to consume originals dairy products. Dairy foods and milk represent a distinct group in human nutrition which contribute to adequate calcium and protein intake and thus dairy food consumption supports good health of bones and muscles. Besides its high calcium content, milk also supports good bioavailability of it by 30%. To offset protein's calciuretic effect it has been recommended at a calcium to protein ratio of 20 : 1 (mg:g). in milk this ratio is 36:1 more favorable than recommended. Many studies have identified reduce colon cancer risk as a result of protective role of dairy proteins, the calcium/vitamin D mechanism, and important role of probiotic bacteria activity present in the fresh milk.[5] The anticariogenicity of dairy products has been demonstrated as a result of a remarkable ability to stabilize calcium phosphate in solution as amorphous form which is localized at the tooth surface buffering free calcium and phosphate ion activities, helping to maintain a state of super saturation with respect to prevent enamel demineralization.[7]

The damage of dairy product authenticity, throw frauds and non legal interventions brings the modification of all this mechanisms and reduces the nutritive value.[8]

MATERIALS AND METHODS

In this study an important place takes the advanced methodic used for the assessment of authenticity throw the tests on significant indices of quality, safety and nutritive value. The safety indices that are study include the microbial aspects and healthy aspects as below :

- Total count of mesophylic bacteria
- Quantity of somatic cells
- Presence and count of coliforms and E. coli as an important test of potentially pathogenic microorganisms contamination.
- Antibiotic presence
- Detection of pesticides residues.

Naturalness of milk quality and nutritive value are evaluated throw the important indices of:

- Cryoscopic point, added water
- Acidity -pH
- Protein and fat content.
-

All methods used are with interest in analytical point of view, some of them are the most advanced and are firstly implemented in Albania. For the total mesophylic microflora and coliforms / E. coli presence are used the petrifilm aerobic count method approved by AOAC that is not significantly different from standard plate count (SPC) which is official method. The medium used respectively is a standard and selective one.[1;6] The pesticides residues monitoring needs sophisticated methods of gas chromatography or HPLC. Another news regarding analytical system implemented in dairy field is the Charm Luminator (LUM-T) a portable analyzer based on bioluminescence and fluorescence. It works in conjunction with the series of test and it is able to provide results for somatic cells and pesticides residues. It is already used a rapid screening assay for the of N- methylcarbamate (CM) and organophosphate (OP) insecticides detection in the milk. This method use a enzyme / receptor which is sensitive to the presence of OP or CM. [2; 3]



Presence of antibiotics in raw milk, in addition to the health problems to the consumer, is a problem for raw milk destined to the processing for fermented products. For the antibiotic residues detection is implemented SNAP β -lactam test. [3].

To measure the total nitrogen and protein content in milk is used the Kjeldahl principle as the standard method.[6]. Also another method developed for its quantitative analyze is dye binding method approved by AOAC. According this, the sample is mixed with a known volume of reagent dye solution. Proteins react with the dye to form precipitate. The remaining unreacted dye concentration measured by a colorimeter is inversely proportional to the protein content of the sample and this can be set to display the percent protein directly. [9]

The authenticity in milk and added water is measured by thermistor cryoscope. The freezing point of -0.517°C has been established as normal for milk. Milks that freeze at or below this value is valued to be free of added water. This is a standard method approved by AOAC. [1]

RESULTS AND DISCUSSIONS

It has been study a considerable amount of raw milks' samples from farmers of most important dairy plants areas, for o period of four months. During our work it has been noted that a correct and hygienic milking is the starting point for the production of an authentic milk. About 42% of the analyzed samples have a total count of microbial flora which is acceptable in comparison with EU standard value, established as maximum of 10^6 cfu/ml. The other part of samples has values over the standard. The data in table N.1 and the graphical presentation in the logarithmic-form (fig 1 and fig. 2) of the statistically processed results show the microbial quality of milks' samples.

Table N. 1

Month	Total count bacteria Average/month cfu/ml	Count of coliforms Average/month cfu/ml	E.coli Average/month cfu/ml
March	1.08×10^6	2.3×10^3	1.42×10^2
April	0.94×10^6	1.7×10^3	1.2×10^2
May	2.2×10^6	3.3×10^3	2.3×10^2
June	3.4×10^6	2.6×10^3	2×10^2
Standard value	$< 10^6$	$< 3 \times 10^2$	$< 10^2$

Referring to the results of the table, an evident pollution with coliforms and E. coli is shown. In the most of samples their presence in raw milk is over the standard values. This fact presents the risk of potentially contamination by pathogenic microorganisms, because they have the same sources such as the intestinal tract of animal; also feeding, environment and packing. It is important to implement cleaning systems for the milking and processing in order to avoid the contamination. Fortunately coliforms and E. coli being thermo-sensible are eliminated by pasteurization. It is necessary to emphasize that the hygienic conditions are the most fragile point, which every state and private organism must work on.

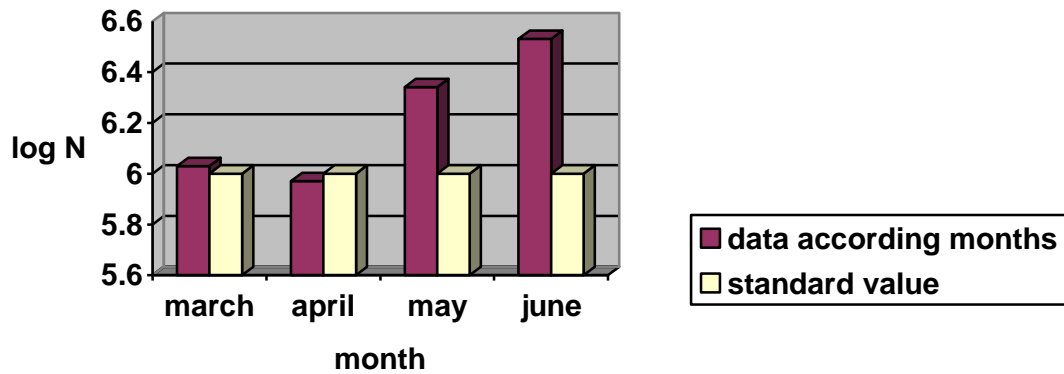


figure 1 Microbial charge of raw milk

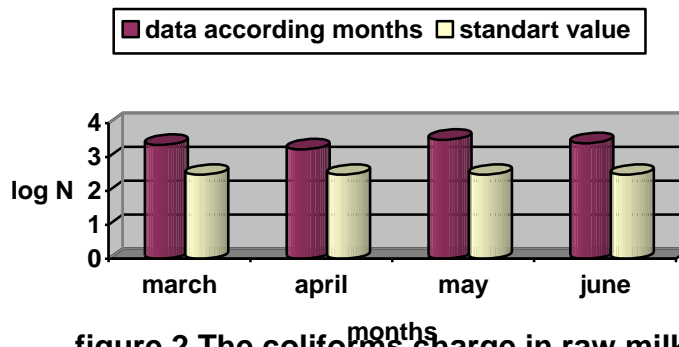


figure 2 The coliforms charge in raw milk

Referring to the data of table N. 2, it is evaluated statistically that 24% of the samples has problems in terms of somatic cells. They are over 4×10^5 cells/ml which is the established value of EU directive. The other part of the cases 76% belongs to sub clinical mastitis. And are apparently positive cases.

Tabela N. 2 Somatic cells content

Month	Result as average/ month cell/ml	Standard value cell/ml
March	3.7×10^5	4×10^5
April	2.4×10^5	4×10^5
May	2.06×10^5	4×10^5
June	4.7×10^5	4×10^5

In relation to the presence of mastitis it has been studied the presence of antibiotics in raw milks and the result is also apparently good. There are only three cases which show the antibiotic presence.



Regarding the pesticides presence it can be confirmed that there is not any problem in these areas. Only few samples of milk show pesticide presence, but it is believed that the source is the feeding and not any environmental pollution, because the other samples of the same area don't show any problem. In addition the same suppliers gave good result after ten days.

Regarding the naturalness and quality of raw milk the tow important indices are study, such as the cryoscopic point and content protein. Theoretically the cryoscopic point changes in short limits even for the same animal, this deals to metabolic effects of the organisms. As a result of these effects is considered normal the amount 0-5% added water. As a reference value of cryoscopic point for raw milk is chosen the standard value of EC directive established as -0.520°C . Based on these considerations, statistically results that 66,7% of samples contain an amount of added water over 5% which proves damages of the quality and originality in raw milk. The graphical presentation of samples distribution according added water amount is shown in figure 3.

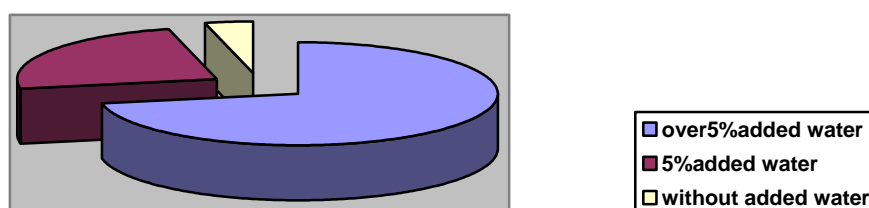


figure 3 Distribution of samples according added water.

Protein is the principal constituent which increases or reduces the nutritive value of milk. Generally the average results taken for the protein content are lower than standard value. The standard range is considered 3,5% - 4%. It is one more parameters which testifies the damage of naturalness in raw milk taken from dairy plants. This fact is evident by the data shown in table N 3 and graphically in figure 4.

Table N 3 Protein content and cryoscopic point in raw milk.

Month	Average value of protein content in %	Average value of cryoscopic point per month
March	2.9	-0.497°C
April	3.3	-0.476°C
May	3.1	-0.472°C
June	2.8	-0.483°C
Standard value	3.5 - 4	-0.520°C

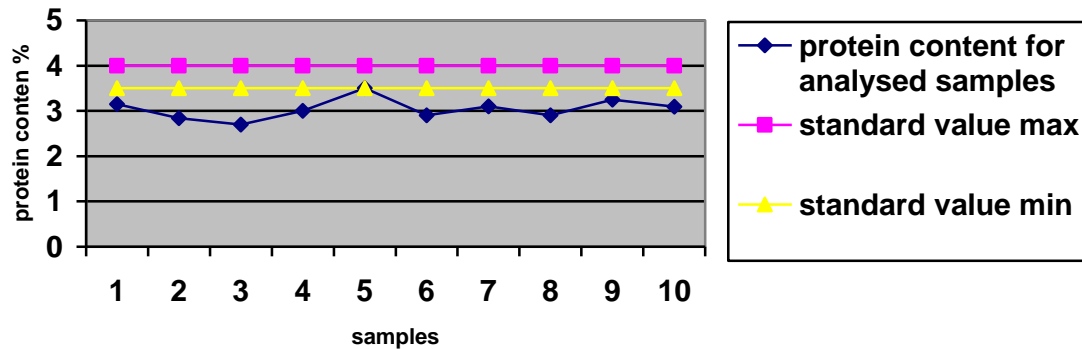


figure 4 Protein content of samples compared to standard value in %

CONCLUSIONS

1. During the period of this study it has been noticed that there are problems dealing the quality, safety and authenticity in dairy products. There are more than 15 years working in the free market economy situation and there is more to do for dairy quality improvement.
2. generally the microbial microflora quality of raw milk is lower than standard value. The presence and quantity of coliforms and E. coli is a present risk for the pathogenic microorganisms contamination.
3. These data deal to low hygienic conditions that are employed in milking, gathering, and transportation of raw milk. It is necessary to emphasize that a correct and hygienic milking is the starting point for the production of a natural milk which needs to be pasteurized in low temperature regimes keeping the quantity and structure of milk's protein and other constituents.
4. It is definitely the time to improve the quality of dairy products by taking a good milk throw improving every link of the chain from the animal to the consumers.
5. Added water in raw milk decreases the nutritive value and the quantity of protein which is lower than normally. In addition to the damage of naturalness and nutritive value of milk, water addition into milk may compromise the real microbial charge in it.
6. All the organisms working in agro processing should make efforts to improve the food quality, implementing the food quality management system through knowledge about the concept of food safety and quality and also the ways to meet standards. The strength control process in every critical point such as the milking and gathering of raw milk is a very important thing to insure a good and healthy food.



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THE PESTICIDES SORPTION FROM WATER SOLUTION BY ARMENIAN NATURAL ZEOLITES

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Nowadays the problem of removal of hydrocarbons from wastewater stream is becoming more actual. The concentrations of hydrocarbons, particularly of pesticides in wastewater are increased rapidly due an agricultural development. Some pesticides have been identified as human carcinogens.

Pesticides cannot be removed by conventional gravity separation technology. The application of treatment technologies to remove pesticides from the produced water would present to the operators a higher degree of complexity, risk and cost to the operations and potentially reduce the viability of many mature operations.

One of the best method for wastewater treatment from organic pollutants, in particularly pesticides, is an application of inorganic and organic adsorbents.

Current treatment processes usually involve also biological degradation or chemical oxidation of the waste organics. These processes suffer from two major drawbacks:

1. they are sensitive to operation conditions (and thus offer inconsistent performance),
2. they destroy the product.

This drawbacks can be use as effectively way for waste pesticides removal from polluted water.

Nowadays natural zeolites are focused in applications in the sector of wastewater decontamination, for instance for removal of ammonium from municipal sewages and abatement of radionuclides from effluents of nuclear power plants [1-9].

There are many reasons for zeolites using in mentioned fields: good selectivity for many toxic cations and harmful compounds [1-2], as adsorbents for gases and organic compounds [1-4].



About using natural Armenian zeolites

Natural zeolite deposits of sedimentary origin are widespread in Idjevan and Shirak regions of Armenia.

Clinoptilolite

The typical formula is $(\text{Na}_2.\text{K}_2.\text{Ca})\text{O}.\text{Al}_2\text{O}_3.10\text{SiO}_2.8\text{H}_2\text{O}$

Limits of change of structure Ca, K, Mg, Na, $\text{K} > \text{Ca}$, $\text{Si}/\text{Al} > 4,25-5,25$.

The symmetry – monoclinic,

The density – $2,16-2,21 \text{ g/sm}^3$,

Free volume $V=0,34 \text{ sm}^3/\text{sm}^3$, density of a skeleton $1,71 \text{ g/sm}^3$.

The diameter kinetic is $3,5-4,2\text{Å}$ and very stable on air up to 700°C

Major deposits of clinoptilolite-rich tuff are spread all over the world, especially in Europe, mostly eastern Europe, e.g., in Bulgaria, Greece, Hungary, Italy, Romania, Slovakia, Slovenia, Turkey and Yugoslavia (Serbia), in Russia and several states of the former Soviet Union (Georgia, Ukraine, etc.), in China, Japan, Australia and in many countries of America, such as Argentina, Cuba, Mexico and the United States.

Clinoptilolite content in the parent rocks is often over 50%. In some occasions contents as high as 80% and over have been claimed, although the reported figures may depend greatly on the method used for their determination.

Natural clinoptilolite has more activity for adsorption of organic compounds than other natural zeolites.

Mordenite

The typical formula is $\text{Na}_2\text{O}.\text{Al}_2\text{O}_3.10\text{SiO}_2.6\text{H}_2\text{O}$

Limits of change of structure is $\text{Si}/\text{Al} > 4,17-5,0$. Na, $\text{Ca} > \text{K}$

The symmetry – rhombic

Free volume $V=0,3 \text{ sm}^3/\text{sm}^3$, density of a skeleton $1,70 \text{ g/sm}^3$.

The diameter kinetic is $3,9-4,4\text{Å}$.

The dehydrated mordenite is adsorbed oxygen or nitrogen quickly, however slowly saturated hydrocarbons.

Mordenite – most high silica natural zeolite, the attitude (relation) in it (him) is always very close to 5. Such attitude (relation) specifies the ordered arrangement of atoms in a skeleton. Mordenite is known also under the names – ptylolite, ardunite, phlocite, deecite.

Mordenite-rich tuff formations are reported and mined in several countries around the world.



The pesticides sorption from water solution by zeolites

The removal of pesticides from agricultural wastewater is an essential problem, as pesticides present in many mentioned wastewater.

In this paper is presented the results of researches on application natural Armenian zeolites as a sorbents of pesticides.

Previously it was investigated the adsorptive activities of zeolites at removal of phenol, aniline, nitrobenzene from tetrachloromethyl solution. It has appeared that organics removal it is better on H-mordenite. The hydrogen bond is the reason of association in water solutions. Such bond is shown during the adsorption on adsorbents, containing on a surface hydroxilic groups. Such effects take place at adsorption of water, alcohols, amines, ammonia and other compounds with active, mobile hydrogen on hydroxilic surfaces of alumina-silicate catalysts. Such surface is formed in protonated zeolites. The molecules of benzene can not penetrate in a cavity of zeolites such as 5A° / a cavity makes approximately 4-5A° /, but freely will penetrate in a cavity of zeolites such as ZSM / a cavity makes approximately 7.5A° and more/. Adsorption of the small molecules of water practically depends on the sizes of the pore and consequently is proportional to a specific surface hydroxilic samples of zeolites up to is rather thin porous silica - KSK.

It is known, that adsorption of hydrocarbons having p-electronic bonds - aromatic and unsaturated / alkenes /, decreases at transition from naphthalene to one-nuclear benzene and alkenes. At last, the adsorption of cyclanes / which molecules have no p-electronic bonds / becomes first very small and, secondly, it changes a mark passing adsorptive-azeotrope point.

In this paper the results of researches on application of natural zeolites as sorbents of pesticides / malathion, fenitrothion, cipermetrin/ are presented.

The adsorptive activities of zeolites at removal of organic substances from tetrachloromethyl solution / CCl₄/ were investigated previously [10]. It has appeared that phenol removal is better on H-mordenite.

During this study it was found that the best adsorption of pesticides was achieved on zeolites which have H-sites (Table). The hydrogen bond is the reason of association in water solutions. Such bond is shown during the sorption on adsorbents, containing on a surface hydroxilic groups.



Sorption of malathion from water solutions on zeolites

Sorbent	Weight of sorpted malathion/ mg ^a	% of sorpted malathion
mordenite-tuff	15	24
H-mordenite	70	87
Clinoptilolite-tuff	20	30
Clinoptilolite-treating	32	45
<u>Clinoptilolite-modified by Ba salt</u>	70	85

a) malathion concentration in water 70 mg/l, 100 gr sorbent, V water – 1000 ml

The molecules of benzene and toluene can not penetrate in a cavity of zeolites such as 5A^o / a cavity makes approximately 4-5A^o /, but freely will penetrate in a cavity of zeolites such as ZSM / a cavity makes approximately 7.5A^o and more/. Adsorption of the small molecules of water practically depends on the sizes of the pore and consequently is proportional to a specific surface hydroxyl group.

Oxidation of pesticide wastewater

Oxidation destroys toxics in industrial wastewater by breaking down molecular structures into simpler components organic molecule. The process is based on the discovery that organic compounds will oxidize in water at relatively low temperatures as long as oxygen is present and the proper operating pressure is maintained. The research indicates that phenolic compounds will be oxidized under these conditions.

There are two reaction pathways for oxidation:

1. Oxygen molecules will directly oxidize the organic compounds with an initial addition step,
2. Oxygen dissociated by the reaction with hydroxyl ions.

The objective of this study is to investigate the natural zeolites to be used as adsorbent in the simultaneous adsorption and oxydation processes under sequencing batch reactor operation to treat wastewater containing pesticides.

Here we have solved to conduct processing the adsorbed pesticides on natural zeolites by oxygen, with intention herein after pesticides removal in water ambience straight.



Experimental part

Preparation of zeolites

Natural zeolites – mordenite and clinoptilolite, were dried under several hours for removing remainder water. H-mordenite, Ba-clinoptilolite with ammonium salt were prepared according the method [11].

Removal of PESTICIDES on zeolites

All experiments were performed at the room temperature. Solutions were constantly stirred for one hour. The removal of pesticides is carried out as follows. The precisely weighed portions of sorbents are brought in to the certain volumes of pesticides in water, which initial concentration vary. The mix is carefully shaken up during 8h. Further test is settled. The quantity of the besieged substance on zeolites is determined by the precipitated organic fraction in the filtered solution by the methods of UV Spectroscopy, Highly Effective Liquid Chromatography (HELCh) and Refractometry. The amounts of sorpted pollutants were calculated from the differences between the amount of pollutants added and that remaining in the final equilibrium solution.

OXIDATION of PESTICIDES

The silica gel place in flask and add tetrachlormethyl solution of the pesticides under intensive agitation, so, to provide even moistening of adsorbent. The solvent drive away and reactionary mixture subject to drainage. After it's done the full drainage of residual. When cooling till -75°C blow out the oxygen with mixture of small amount of ozone. The temperature of the process rises, until -60°C . Hereon organic solvent select the products of the oxidation.

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HISTOLOGICAL AND BIOCHEMICAL EFFECTS OF INSECTICIDES MALATHION AND ENDOSULFAN ON RAT TESTIS

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Endosulfan is a manufactured pesticide. It is used to control a number of insects on food crops such as grains, tea, fruits and vegetables and on nonfood crops such as tobacco and cotton. Malathion is an organophosphate compound and one of the most widely used organophosphate insecticides throughout the world. In this study was conducted to assess the in vivo effects of the endosulfan and malathion on the testis tissue of rats.

Key Words: *Endosulfan, Malathion, Testis, Rat*

INTRODUCTION

Endosulfan and malathion are widely used insecticides in Turkey to maintain crop and food production, fight against infesting pests, safeguard humans from vector borne diseases and related epidemics. Endosulfan is an organochlorine insecticide. This group of insecticides draws major health concern due prolonged persistence in the body. Endosulfan, however, has low residual persistence and hence had been preferred over other insecticides in this group (2, 5). Malathion is an organophosphate compound and one of the most widely used organophosphate insecticides throughout the world. It is used to control pests affecting agricultural crops, ornamentals, greenhouses, livestock, stored grain, forests, buildings, households and gardens. Contributing to its popularity is its relatively low acute mammalian toxicity. In this study, combination of low and high doses of endosulfan and malathion were administered orally to the male and female rats for 15 days. In this study, the effects of endosulfan and malathion on testis of rats was investigated (3, 4).

MATERIALS AND METHOD

Animals:

Adult male (n=10) and female (n=10) Wistar albino rats (150-200 g) were obtained from Marmara University, Center for Animal Breeding, İstanbul, Turkey. The rats were divided at random into four groups of 3 animals each. They were maintained under a well regulated light and dark (12h:12h) schedule at 24°C±3°C, and were allowed free access to laboratory chow and tap water. The experimental groups in present study were as follows: low dose of endosulfan (Group I), high dose of endosulfan (Group II), low dose of malathion (Group III), high dose of malathion (Group IV) and control group (Group V). The test group was given by intraperitoneal endosulfan dissolved in physiological saline solution at a dose of 1.0 mg/kg body weight for 15 days. The control animals received a similar volume of the vehicle. Twenty-four hours after the last treatment, the rats were weighed and sacrificed using ether anesthesia. The testis tissues were removed immediately, cleaned and weighed. Tissues were homogenized using homogenizer.



Biochemical analysis:

After decapitation, the testis tissue samples were immediately taken and stored at -70°C . Afterwards, malondialdehyde (MDA) levels, an end product of lipid peroxidation, and histological analysis were measured in these tissue samples.

Testicular histopathology:

The testis was fixed in alcoholic Bouin for 8 hours. Fixed tissue was dehydrated and embedded in paraffin wax and sectioned transversely at 6-7 μm thickness and stained with Hematoxylin Eosin. The Periodic Acid Schiff reaction was applied. Samples were evaluated by examining under light microscope. Furthermore, tissue samples were kept in 10% neutral formaline solution and then transferred into the paraffine blocks for histological examinations.

Malondialdehyde (MDA) assays:

The testis tissue samples were taken by using appropriate techniques for histological and biochemical examinations. Malondialdehyde were determined in tissue samples. Tissue samples were homogenized ice-cold 150 mM KCl in a tissue homogenizer for determination of malondialdehyde levels. The MDA levels were assayed for products of lipid peroxidation. Results were expressed as $\mu\text{mol MDA/g tissue}$ (1). The protocols were approved by the Animal Ethical Committee of Marmara University, Faculty of Medicine. This research was supported by Marmara University, Scientific Research Found (Project no: FEN-BGS-290906-0211).

RESULTS AND DISCUSSION

There is experimental evidence of adverse effects of endosulfan on the male reproductive system delaying sexual maturity and interfering with the sex hormone synthesis. Long term health effects are not properly studied, experimented or documented world wide (6, 7). Endosulfan was classified by the WHO in the category of technical products that are moderately hazardous. It has been shown that endosulfan has estrogenic property and male rats are more sensitive to the chronic effect of endosulfan than female rats (2).

The microscopical changes were compared with the testes of normal rats. Light microscopy study demonstrates that the changes occurred mostly in seminiferousepithelium, intertubular space, spermatogonia, spermatocytes, spermatid and spermatozoa. Major changes attributed to the testis after endosulfan and malathion treatment in rats are fusion, invagination, distortion and disintegration of seminiferous tubules, autolysis of cells, arrest of spermatid formation and of spermatogenesis and decrease in number of interstitial cells. Damage to the seminiferous tubules was noted in almost all the testes of malathion and endosulfan treated rats. Interstitial oedema, congestion and also desquamation of the lining cells of the seminiferous tubules was noted. Leydig cells were conspicuously absent.



At day 15, detachment of spermatocytes and spermatids became evident, with apparent radial cracks being formed between the germ cells. It could also be concluded, if spermatocytes and spermatids were detached from the seminiferous epithelium in proportions, that key spermatogenic lesions also included impairment in meiosis (development of spermatids from spermatocytes) and spermiogenesis (transformation of elongated spermatids from round spermatids), as indicated by significantly smaller numerical ratios between round spermatids and spermatocytes and between elongating spermatids and round spermatids. Degeneration (pyknotic nuclei) or apoptosis of spermatocytes and spermatids as observed in the current study and previous studies (8, 9) also indicated impairment in meiosis and spermiogenesis. The sperm tail, but not the head morphology was affected by malathion and endosulfan, which was inconsistent with the results of Giri *et al.* (11). The sperm tail morphology could be affected by a number of mutagenic agents (10). Malathion and endosulfan interferes with rat testicular function, being toxic both to the somatic (Leydig and Sertoli) and spermatogenic cells (mainly spermatogonia and maturing spermatids).

It is concluded that this pesticides, caused irreversible or partly reversible damage, affecting adversely the testicular functions of wistar albino rats. Doses of pesticides elicits a toxic effect on germinal and somatic cells of the testis (12). There is a depletion of the population of renewing spermatogonia, followed by spermatogonial proliferation. The damage of Sertoli and Leydig cells add an additional compromise of spermatogenesis, in view of the close interrelationship of somatic and germ cells in the testis.

In summary, although the available reproductive studies indicate endosulfan has no adverse effects on male reproductive organs have been in young rats and mice. The lack of effects seen in the studies that examined reproductive performance in treated males nad females seems difficult to explain, given the finding of altered spermatogenesis in the more recent studies.

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A BEVERAGE HAVING BENEFICIAL SUBSTANCES ON HUMAN HEALTH: WINE

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Wine is one of the most important beverages on human health. Its importance arises from not only the nutritive value but also its natural antioxidant compounds. The aim of this study is to determine the organic acids (galactronic, tartaric, malic, lactic, acetic, citric, succinic and fumaric acids) and *trans*-resveratrol by HPLC, and phenolic compounds by spectrophotometric methods in red wines to know the major differences among wines. The following spectrophotometric assays were performed: total phenols by Folin-Ciocalteu, total flavanols by vanillin method and flavonols by Neu's reagent solution method. Four different Turkish red wines obtained from Boğazkere, Kalecik karası, Öküzgözü and Papaz karası grape cultivars were used as research materials.

The most abundant organic acid in Boğazkere, Papaz karası and Öküzgözü wines was galactronic acid, while Kalecik karası had the highest lactic acid value. *Trans*-resveratrol contents ranged from 0.22 to 0.68 mg/L, total flavanol contents from 181.87 to 1835.47 mg/L, total flavonol contents from 129.94 to 255.54 mg/L and total phenolic contents from 1066.35 to 2151.63 mg/L. It was found that there were differences among wines in respect to organic acids and phenolics.

Key Words: *Red wine, organic acids, trans-resveratrol, flavanol, flavonol, phenolics*

INTRODUCTION

Organic acids, present in small quantities, are important constituents in wine. The nature and concentrations of organic acids are important factors influencing the organoleptic properties of fruit and fruit products. [1] The contents of organic acids in must and wine influence the balance of the flavor, the chemical stability and pH, and thus the quality of the wine. [2-3] Especially α -hydroxy acids including tartaric, malic, lactic and citric acids responsible for these characteristics are routinely determined not only in wines but also in various phases of the production process. [4] Therefore, it is important to be able to quantify organic acids present in must or wine for quality and process control.

Phenolic compounds, naturally occurring substances in plants, are a large and complex family. Phenolics are directly related to some characteristics of fruit and vegetables such as taste, palatability and nutritional value and have particular importance for the characteristics and quality of red wines. [5] The phenolic compounds in wines contribute to the quality properties such as color, flavour, astringency and bitterness.

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Wines contain large amounts of phenolic compounds. In red vinification, maceration with skins and seeds, during fermentation, is responsible for the higher resveratrol levels of red wines in comparison with the white ones. Research on the *trans*-resveratrol content of wines has been prompted by increasing interest in the prevention of cancer and hearth diseases. [6]

Wines also contain flavonoids including flavanols and flavonols at high concentration. Flavonoids are a group of natural benzo- γ -pyran derivatives and are ubiquitous in photosynthesising cells. [7] Although they are not considered essential nutrients, they are known to support human health due to their antioxidant, antimutagenic and anticarcinogenic properties. [8-13]

The objective of this study was to determine the contents of organic acids, *trans*-resveratrol, total phenolics, total flavanols and total flavonols for their beneficial effects on human health and the quality of the wines.

EXPERIMENTAL

Materials

Wines obtained from Boğazkere, Kalecik karası, Öküzgözü and Papaz karası were used in the analyses. Different brands of wines were purchased from a hypermarket in Isparta, Turkey. Before analyses, different brands of each wine were combined in equal volumes.

Organic acid analyses by HPLC

Determinations were made by direct injection. The wines were filtered through 0.45 μ m membrane filter before 20- μ L injections. High Pressure Liquid Chromatography (HPLC) analysis of organic acids was performed by HPLC on a Shimadzu class LC VP HPLC system with class LC-VP software equipped with a photo-diode array detector (DAD) and a pump (LC-6AD). Distilled water adjusted to pH 2.3. with phosphoric acid (H_3PO_4) was used as mobil phase. The flow rate was 0.6 mL/min and the column temperature was set at 30 °C. YMC Pack-ODS-AM (250 x 4.6 mm i.d., 5 μ m) column was used. The DAD detector was set at 190 nm. Initial identity assignment of organic acids was based on comparison retention data obtained with DA detector for standard compounds and sample components. Quantification was achieved by using peak areas from external calibration with standard (Galactronic, tartaric, malic, lactic, acetic, citric, succinic, fumaric acids) solutions. All determinations were done three times by using three different samples.

Determination of *trans*-resveratrol by HPLC

The contents of *trans*-resveratrol in the wine samples were evaluated by reversed phase-high performance liquid chromatography (RP-HPLC). Wines were used directly without any prior purification after filtration. Detection and quantification was carried out with a SCL-10Avp System controller, a SIL-10AD vp Autosampler, a LC-10AD vp pump, a DGU-14a degasser, a CTO-10 A vp column heater and a diode array dedector with wavelengths set at 278 nm. The 250 x 4,6 mm i.d., 5 μ m column used was filled with Luna Prodigy, 5 μ .



The flow rate was 1 mL/min, injection volume was 10 μ L and the column temperature was set at 30 °C. Gradient elution of two solvents was used: Solvent A consisted of: acetic–water (2:98 v/v), solvent B: methanol and the gradient programme used is given Table 1. The data were integrated and analyzed using the Shimadzu Class-VP Chromatography Laboratory Automated Software system. The wine samples, standard solutions and mobile phases were filtered by a 0.45 μ m pour size membrane filter. The amount of *trans*-resveratrol was calculated as mg/L wine using external calibration curves, which were obtained for *trans*-resveratrol standard. *Trans*-resveratrol contents of wines were determined by the modified method of Caponio et al. [14]

Determination of phenolics by the spectrometric methods

Wines were dealcoholized in vacuo in rotary evaporated at 35 °C in order to separate the non-alcoholic fraction rich in phenolics from the ethanol and then diluted to the original volume with distilled water. Spectrophotometric measurements were performed UV-Visible spectrophotometer (double beam) Perkin Elmer.

Total phenolic contents of the wines were determined spectrophotometrically according to the Folin-Ciocalteu colorimetric method¹⁵, calibrating against gallic acid standards and expressing the results as mg gallic acid equivalents (GAE) /L wine. Data presented are average of three measurements. Total flavonols were determined with Neu's reagent solution by the method of Dai et al. [16] The absorbance of the samples and standard were measured at 410 nm and the the flavonols were expressed as mg rutin equivalent (RE)/L. Total flavanols were assayed colorimetrically by the vanillin method using catechin as a standard. [17] The absorbance of samples was measured at 500 nm and the contents of total flavanols in the wines were expressed as catechin equivalents (CE)/L. All determinations were carried out in triplicate and the results were averaged.

Results and Discussion

The separation and determination of organic acids in red wines were carried out by HPLC and the results were given in Table 1.

Table 1.Organic acid concentrations of Turkish red wines from Boğazkere, Kalecik Karası, Öküzgözü and Papazkarası as mg/L.

Organic acids	Wines			
	Boğazkere	Kalecik karası	Öküzgözü	Papazkarası
Galactronic acid	1818.40±33.70	1455.00±44.50	2017.00±53.30	381.70±7.30
Tartaric acid	1597.20±15.30	762.30±34.80	1628.20±57.90	1619.6±15.74
Malic acid	147.50±3.60	nd	140.50±3.60	200.70±3.50
Lactic acid	301.30±36.7	2207.60±35.30	1014.70±34.80	1335.70±34.50
Acetic acid	601.30±32.30	653.70±32.80	402.80±31.30	530.00±31.70
Citric acid	158.10±3.70	196.00±3.70	142.80±3.70	136.70±3.70
Succinic acid	560.40±22.00	273.20±23.40	438.10±22.50	718.40±21.70
Fumaric acid	4.35±0.09	2.18±0.07	0.70±0.08	0.66±0.08

nd: not detected



As it was shown in the table, galactronic, tartaric, malic, lactic, acetic, citric, succinic and fumaric acids were separated in red wines. In this study, the values ranged from 381.70 to 2017.00 mg/L for galactronic acid, from 762.60 to 1628.20 mg/L for tartaric acid, from not detected to 200.70 mg/L for malic acid, from 301.30 to 2207.60 mg/L for lactic acid, from 402.80 to 653.70 mg/L for acetic acid, from 136.70 to 196.00 mg/L for citric acid, from 273.20 to 718.40 mg/L for succinic acid and from 0.66 to 4.35 mg/L for fumaric acid. While lactic acid was the most abundant organic acid in Kalecik karası wine, malic acid was not detected in this wine. This result agrees with the findings of Castiñeira et al. [18] They reported that lactic acid was the main organic acid in wines and malic acid was not detected in some wine. However, the other wines, Boğazkere, Öküzgözü and Papazkarası, showed a predominance of galactronic acid followed by tartaric acid. According to our knowledge, there was limited study conducted on the determination of the galactronic acid in wines. [19] Although the studies generally focused on the tartaric, malic, lactic, acetic and succinic acids [18, 20], it was reported that galacturonic acid was also found in many other wines and contributed to total acidity. [19] Organic acid composition changes according to wines. [19, 21] In this study, the highest values of galactronic and tartaric acids were found in Öküzgözü; lactic, acetic and citric acids in Kalecik karası and malic and succinic acids in Papazkarası. Fumaric acid concentration was extremely low compared to the other acids and Boğazkere wine had the highest amount of fumaric acid. The level of particular organic acids may give desirable or unwanted flavor characteristics to the wine. For example, malic, lactic, citric, and tartaric acids affect the sensory properties of wine, particularly tartness. Excessive amounts of acetic acid make wine undrinkable. Therefore it is important for the winemaker to monitor the level of certain organic acids during the production of wine.

Table 2 shows the *trans*-resveratrol values, total flavanols, total flavonols and total phenolics obtained after the analysis of the four wine samples including Boğazkere, Kalecik karası, Öküzgözü and Papazkarası.

Table 2. *Trans*-resveratrol, total flavanols, total flavonols and total phenolics contents of turkish red wines from Boğazkere, Kalecik karası, Öküzgözü and Papazkarası as mg/L.

Wines	<i>Trans</i> -resveratrol	Total flavanols	Total Flavonols	Total phenolics
Boğazkere	0.39±0.01	1835.47±24.11	255.54±8.36	2151.63±46.85
Kalecik karası	0.43±0.01	669.02±34.45	129.94±4.18	1279.35±15.49
Öküzgözü	0.68±0.01	392.97±11.68	191.53±2.09	1485.58±5.86
Papazkarası	0.22±0.01	181.87±11.48	199.99±3.62	1066.35±30.99

Trans-resveratrol contents were ranged from 0.22 to 0.68 mg/L in wine samples. The highest value was determined in Öküzgözü wine followed by Kalecik karası, Boğazkere and Papazkarası. It was found differences among the wine and it has been well known that the amounts of *trans*-resveratrol in red wines varied considerably in the types of wine, depending on the grape variety. [6, 22] In the previous articles, it was reported that *trans*-resveratrol levels were between 0.05-2.534 mg/L in wines. [6, 23-27] The stilbene resveratrol in a variety of plant species and also grape berries and wines is an important phytoalexin. Researches on the *trans*-resveratrol content of wines has been prompted by increasing interest in the prevention of cancer and heart disease and are also stimulated by the potential beneficial effects on health. [28, 29]



In our study, total phenolics, flavanols and flavonols were measured as spectrophotometrically. For routine quality control, spectrophotometric methods such as the Folin-Ciocalteu, the vanillin assays, which are well understood in terms of their mechanism, are considered very valuable because they cause low cost and are quick and reproducible. [30] The mean amounts of total phenolics in wine were 2151.63 mg GAE/L of Boğazkere, 1485.58 mg GAE/L of Öküzgözü, 1279.35 mg GAE/L of Kalecik karası and 1066.35 mg GAE/L of Papazkarası. The content of total phenolics has been extensively studied and was found between 1000 and 4000 mg GAE/l in red wines. [13, 31] Phenolic compounds are important substances of wine. They contribute to sensory characteristics such as colour, flavour, astringency and hardness of it. In addition, antioxidant activities of red wine were reported to be related their measurements of total phenols. [32] Total flavanols and flavonols phenolics were determined between 181.87-1835.47 and 129.94-255.54 mg/L in wines, respectively. Wine from Boğazkere cultivar had the highest value not only total phenolic but also total flavanol and flavonol. While the least value for total flavanol was determined in Papazkarası wine, Kalecik karası was the wine exhibiting the least flavonol content with 129.94 mg/L. In previous study, total flavanol content was found as 475 mg CE/L in red wine. [33] The vanillin-HCl assay is quite specific to a narrow range of flavanols (monomers and polymers) including catechin monomers and the most commonly used methods for rapid quantification of condensed tannins in plant materials. [34, 35] Condensed tannins are also known that belong to the oldest of plant secondary metabolites and while polymers responsible for the astringency, monomers such as catechin and epicatechin contribute to its bitterness. [36] The reactivity of condensed tannins with molecules of biological significance such as proteins, metal ions and polysaccharides has important nutritional and physiological consequences, and hence the determination of the content of condensed tannins in plant material is important. [37] Flavonols such as quercetin and rutin are also responsible bitter taste in wines depends on the grape cultivar [36] and known to support human health by serving as anti-inflammatory, antihistaminic and antiviral agents. [13]

As a result, it was determined that Turkish red wines used in this study are rich in phenolic constituents affecting the wine quality and supporting the human health and have balanced organic acid constituents affecting stability, color and flavour of wines.

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A CONTENT STUDY ON ENVIRONMENTAL JOURNALISM WITH SPECIAL REFERENCE TO PRINT MEDIA

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Throughout history humans have both affected, and been affected by, the natural world. While a good deal has been lost due to human actions, much of what is valued about the environment has been preserved and protected through human action. While many uncertainties remain, there is a realization that environmental problems are becoming more and more complex, especially as issues arise on a more global level, such as that of atmospheric pollution or global warming and others.

Interactions between human society and the environment are constantly changing. The environment, while highly valued by most, is used and altered by a wide variety of people with many different interests and values. Difficulties remain on how best to ensure the protection of our environment and natural resources. However, a well-managed environment can provide goods and services that are both essential for our well being as well as for continued economic prosperity. The environment has become one of the most important issues of our time and will continue to be well into the future.

It was observed that coverage trend of environmental issues differ within print media i.e. local as well as national dailies etc. since the environmental consciousness' among different categories of the society is fast increasing due to realization of adverse impact of environmental degradation. But at the same time, it was also realized that the society by and large was not fully aware about the facts of the degradation and conservation etc. In this context the media particularly the print media that had got the widest circulation among the population has significant role in creating awareness on the environmental issues and also educate the public on conservation of the same.

This study on environmental journalism in selected news dailies with particular reference to print media was being taken up primarily to assess the current status of coverage of environmental related news both in national as well as local news dailies. Also the assessment of comparative trend of covering environmental news versus other news in the selected dailies will facilitate to suggest future strategies for environmental journalism.

Environmental journalism is the collection, verification, production, distribution and exhibition of information regarding current events, trends, issues and people that are associated with the non-human world with which humans necessarily interact. To be an environmental journalist, one must have an understanding of scientific language and practice, knowledge of historical environmental events, the ability to keep abreast of environmental policy decisions and the work of environmental organizations, a general understanding of current environmental concerns, and the ability to communicate all of that information to the public in such a way that it can be easily understood, despite its complexity.



Objectives

To analyze the coverage of environmental related issues in comparison with the other news items in both national as well as local dailies.

Research Methodology

The main objective of this study is to make a comparative study of the current status/ trend of publication and analyse the salience and coverage given to the environmental issues in print media. The content study on environmental journalism with special reference to print media is mainly carried out to study the prominence and importance of environmental issues in the selected news dailies. For this purpose content analysis of environmental news published over recent two years in two dailies- one national and one local- was carried out. Simultaneously interactive exploration with concerned print media personnel was also carried out in order to know their perception regarding the publication of environmental news.

As this study primarily aims at assessing the coverage strategy- trend of environmental related information by the national as well as local dailies, content analysis, which is the tested journalistic measure for such kind of purpose, has been selected as the method or design of the study. The content analysis is a proven journalistic measure / methodology to assess and analyse the media trend in terms of issue coverage and media salience, which include space and comparative prominence given to various media issues.

For the present study, content analysis was carried out considering different aspects of environmental issues in print media. An initial study was conducted to make a comparative analysis on current status/trend of publication of environmental related news/ issues in national as well as local dailies. For this, daily editions of the selected newspapers published in two years starting from January 2004 to December 2005 were taken and a thorough content study on environmental issues was conducted.

The coverage aspects of environmental related issues in comparison with the other news items related to politics, sports, entertainment and others in both the selected national as well as local dailies is- was carried out

The researcher studied the two newspapers, ie both the national (English) as well as local (Telugu) dailies of two years. One national daily published in English and one local daily published in Telugu as this study was conducted in Andhra Pradesh state.



Salient findings

The extent of coverage of environmental issues in both the selected dailies in two years gives a clear design on different environmental issues that were published. It was noticed that in both the years, the issues on environmental conservation and management were covered mostly when compared to the others. In The Hindu, the issues on environmental conservation and management headed the other issues followed by issues on wildlife and biodiversity and global environmental issues. In Eenadu, the issues on pollution were the majority followed by those on conservation and management and disaster management. The issues on environmental activism also were covered to a good extent in the selected national daily when compared to the local daily. The other issues like environmental law and policy regulations, environmental impact assessment and others were covered in majority in each month. Most of the articles on disaster management were covered in the months of January and November. The articles on environmental activism were mostly covered during the months of June in both the years of the study. Through this table, it can be seen that, almost all the articles are given equal weightage in both the dailies in the years of the study.

Implications of the study

The study would help in analyzing the role of print media in publishing the articles on issues related to environment. This can be used for further studies in the future.

The finding of the study would also help us to know the present status/trend of publication of environmental related news in both national as well as local dailies. It also would provide insight on the comparative status of publication of environment related information that of with other news items. Based on these findings, the study would also recommend to the media regarding the publication of environmental information and also specify the role of media in general to create public awareness on crucial environmental issues. Thus the analysis of environmental related issues in the print media would help in finding out the importance given to the environment by print media in publishing the news.

Introduction

1.1 Preamble

Throughout history humans have both affected, and been affected by, the natural world. While a good deal has been lost due to human actions, much of what is valued about the environment has been preserved and protected through human action. While many uncertainties remain, there is a realization that environmental problems are becoming more and more complex, especially as issues arise on a more global level, such as that of atmospheric pollution or global warming and others.

Interactions between human society and the environment are constantly changing. The environment, while highly valued by most, is used and altered by a wide variety of people with many different interests and values. Difficulties remain on how best to ensure the protection of our environment and natural resources. However, a well-managed environment can provide goods and services that are both essential for our well being as well as for continued economic prosperity. The environment has become one of the most important issues of our time and will continue to be well into the future.



According to Joseph (2001), Environmentalism emerged during the late 1960s and the early 70s. The first broad environmental discourse was the growth debate that started in 1972 with the Club of Rome report "Limits to growth". Towards the mid-1970s some philosophers came in, taking sides on ethical grounds, and towards the end of the 1970s political scientists entered the arena, looking into government processes and institutional capacity building. The first half of the 1980s saw psychology coming in by investigating into the subject of environmental awareness and personal attitudes towards environmental issues.

In spite of the fact that the emergence of environmentalism indeed has to do with the cultural dynamics of value orientations, it did not attract much attention from academia. As compared to the other movements of the time like the antiauthoritarian education movement and the extra parliamentary protest movement.

The need for environmental awareness started growing in the recent past. Various strategies have been adopted to spread environmentalism since decades. Awareness camps, education programmes and many others on various issues of environment have been carried out. The issues of concern varied from local to global level. They were mostly on conservation aspects of environment. In country like India, where traditions play a major role, the need for environmental awareness also plays a vital role.

The movements lead by many activists in the past stand as milestones in spreading environmentalism in our nation. The blend of tradition and science had been in effect since many decades. People worshipped environment and lead environmental activities in the name of tradition and culture in our nation.

Inspite of creating awareness, providing information on environmental issues was also essential. The public tends to seek information on various issues of environment. This could be to gain knowledge or to gather information. Information gathering was mostly done by observing the surroundings or by personal experience.

In this aspect, media plays a vital role. Media dissipates most of the information. It can be through electronic media as Television, radio, etc or by print media as newspapers, magazines, newsletters, pamphlets etc. Thus the process of dissipating environmental news through media stands for environmental journalism.

The media has a definite role to play in conveying the message to the public and build a bridge between the environment and the society. Despite its direct interaction with environment through day-to-day livelihood activities, the society is largely dependent on the media to acquire the information on the environment. However it is generally observed that environment related news usually loose out in the competition with the other news items like political, sports, entertainment etc for space in the print media.



It is also observed that coverage trend of environmental issues differ within print media i.e. local as well as national dailies etc. since the environmental consciousness' among different categories of the society is fast increasing due to realization of adverse impact of environmental degradation. But at the same time, it is also realized that the society by and large is not fully aware about the facts of the degradation and conservation etc. In this context the media particularly the print media that has got the widest circulation among the population has significant role in creating awareness on the environmental issues and also educate the public on conservation of the same.

This study on environmental journalism in selected news dailies with particular reference to print media is being taken up primarily to assess the current status of coverage of environmental related news both in national as well as local news dailies. Also the assessment of comparative trend of covering environmental news versus other news in the selected dailies will facilitate to suggest future strategies for environmental journalism.

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Environmental journalism is the collection, verification, production, distribution and exhibition of information regarding current events, trends, issues and people that are associated with the non-human world with which humans necessarily interact. To be an environmental journalist, one must have an understanding of scientific language and practice, knowledge of historical environmental events, the ability to keep abreast of environmental policy decisions and the work of environmental organizations, a general understanding of current environmental concerns, and the ability to communicate all of that information to the public in such a way that it can be easily understood, despite its complexity.

1.2 Objectives

- To make the comparative study of the current status/ trend and salience of publication of environmental related news/issues in selected national as well as local dailies.



1.3 Implications of the study

The results of this study bear the following implications-

- i) The study would help in analyzing the role of print media in publishing the articles on issues related to environment. The environmental articles published This can be used for further studies in the future.
- ii) The finding of the study would also help us to know the present status/trend of publication of environmental related news in both national as well as local dailies.
- iii) It also would provide insight on the comparative status of publication of environment related information that of with other news items.
- iv) Based on these findings, the study would also recommend to the media regarding the publication of environmental information and also specify the role of media in general to create public awareness on crucial environmental issues. Thus the analysis of environmental related issues in the print media would help in finding out the importance given to the environment by print media in publishing the news.

Theoretical orientation

The literature on environmental journalism had been portrayed in this study. Not much study has been carried out so far in this related field. As this is relatively a new field in our country, much awareness is also not seen on the topic. However some similar studies have been identified which were carried out by different researchers.

2.1 Concept of environmental journalism

According to Meisner (2006) of the [Environmental Communication Network](#), “environmental communication is all of the many forms of communication (interpersonal, group, public, organizational, mass, etc.) that are engaged with the social debate about environmental issues and problems.”

Also within the scope of environmental communication are the genres of nature writing, science writing, environmental literature, environmental interpretation and environmental advocacy. While there is a great deal of overlap among the various genres within environmental communication, they are each deserving of their own definition.

According to http://en.wikipedia.org/wiki/Environmental_journalism (2006), Environmental interpretation is a particular format for the communication of relevant information. It “involves translating the technical language of a natural science or related field into terms and ideas that people who aren’t scientists can readily understand. And it involves doing it in a way that’s entertaining and interesting to these people”

Environmental interpretation is pleasurable (to engage an audience in the topic and inspire them to learn more about it), relevant (meaningful and personal to the audience so that they have an intrinsic reason to learn more about the topic), organized (easy to follow and structured so that main points are likely to be remembered) and thematic (the information is related to a specific, repetitious message). While environmental journalism is not derived from environmental interpretation, it can employ interpretive techniques to explain difficult concepts to its audience.



According to http://en.wikipedia.org/wiki/Environmental_journalism (2006), Environmental literature also arrives in this context. Environmental literature is writing on issues of environment. Science writing covers write-ups of science and relevant issues where as environmental literature is exclusive for environmental reports and issues. These reports are supposed to bridge the gap between the environment and the society. These cover wide areas of environmental issues like pollution of water, air, soil; biodiversity, wildlife, environmental law, education and awareness and others.

2.2 History of environmental journalism

According to http://en.wikipedia.org/wiki/Environmental_journalism (2006), While the practice of nature writing has a rich history that dates back at least as far as the exploration narratives of [Christopher Columbus](#), and follows tradition up through prominent nature writers like [Ralph Waldo Emerson](#) and [Henry David Thoreau](#) in the late 19th century, [John Burroughs](#) and [John Muir](#) in the early 20th century, and [Aldo Leopold](#) in the 1940s, the field of environmental journalism did not begin to take shape until the 1960s and 1970s.

The growth of environmental journalism as a profession roughly parallels that of the environmental movement, which became a mainstream cultural movement with the publication of [Rachel Carson](#)'s *Silent Spring* in 1962 and was further legitimized by the passage of the [Wilderness Act](#) in 1964. Grassroots environmental organizations made a booming appearance on the political scene in the 1960s and 1970s, raising public awareness of what many considered to be the "environmental crisis," and working to influence [environmental policy](#) decisions. The mass media has followed and generated public interest on environmental issues ever since.

2.3 Previous studies on content analysis

Krishnakumar and Shrivastava (2005) in their study on "Media (print) perception, coverage and its agenda setting effect in relation to JFM issues, special reference to Harda" revealed that the extent of news coverage on social/participation issues was equal to the extent of coverage of Jan Sunwai and this was followed by conflict, complaints on functioning of Forest department and so on. The grievances against the functioning of forest department also got top priority in the media coverage. Many articles written in favour of the MTO movement, written by their member and sympathizers like appears in local as well as national newspapers apart from the news coverage by the media correspondents. There was not even response to the complaints by the forest department published through the print media.

The first ever study on content analysis of News papers was carried out in 1893 Klauss (1980). Speed in this study on 'Do News papers now give the News' showed that how religious scientific and literary matters had dropped out of leading New York News papers between 1881 and 1893 in favour of gossip sports and scandals. A similar study attempted to reveal the over whelming space it devoted to demoralizing unwholesome and trivial matters as opposed to worthwhile news item. The simply measuring the column inches a newspaper devoted to particular subject matters, journalists attempted to reveal "the truth about newspapers" believed that they have found a way of showing the profit motive as the cause of "cheap yellow journalism", became convinced that they had established "the influence on newspaper presentation on the growth of crime and other anti social activity" are concluded that a "quarter – century survey of the press content shows that the demand for fact".



Krishnakumar (1990) in his study on “Farm information agenda setting- comparative media analysis” revealed that newspapers were more selective in publishing the farm messages due to the space limitation, competition with other news and also due to editorial policies. Radio and television transmitted most of the farm messages received from the source of information through the farm broadcast and farm telecast respectively. The three media were almost similar in giving prominence to problem oriented message. Newspaper and radio appeared identical in giving prominence to messages related to crop management, rural youth, government policies and schemes, allied farm activities and rural artisans.

According to Walliullah (1981), each of the treatment has been able to bring about significant changes in knowledge, attitude and symbolic adoption of respondents. In his study on “Effectiveness of selected extension methods and media on farmers knowledge, attitude and symbolic adoption with reference to diseases outbreak and controlling cattle”, the author concluded that among the Lecture, CCTV and group discussions, lecture was least effective of all while the media has significant influence on gaining knowledge and symbolic adoption. Their influence on attitude form appears to be less pronounced. If extension workers have access to such media and can use them effectively, the results are bound to be encouraged.

Selvaraj and Sasikumar (1999) revealed that regarding newspapers advertisements frequency more than half of the respondents (53.58%) prefer to read farm advertisement once in a week and 42.85% prefer daily. In their study on “Farmers’ preference about the farm advertisements in mass media”, the authors mentioned that 71.43% of the respondents preferred to read farm advertisements with agriculture columns, as in Radio and Television. Nearly half of the respondents (47.62%) prefer to read farm advertisements when it is published on top of the page. But, publication at top of the page needs higher charge than publication at the bottom. In newspapers also 48.81% prefer product/service feature appeal. Like in other two media, majority have preferred to read advertisements about seeds.

According to Mohanty and Mangaraj (1999), to develop civil sense and feel the responsibility towards protecting the environment and the causes the big and gruesome injury to our environment, the child need to be exposed to maximum environmental awareness programme through different sources. Majority of rural school children have acquaintance with radio followed by TV, News paper and Magazine. It may be due to Socio Economic status of their family, intermediate items or timely availability of source. Majority of rural school children are getting exposure to entertainment programmes followed by programmes on sports, education, News environment and agriculture. It may be due to low coverage of agriculture programme in those media or lack of interests among the respondents. In the News papers exposure is more to news about pollution followed by afforestation, animal preservation and others. Broadly it shows that exposure is low in case of News papers and below expectations in case of magazine.

The mass media and public opinion are mutually influencing. Charless (1958) while explaining the comparative role of press, radio and television, observed that all the media might make some effort to acquiesce to public demand, primarily because they would lose the public as readers or listeners if they ignored this demand. Press; to some degree give the public what the public want. At its best, the newspaper exerts a tremendously powerful influence, but it is less personalized than the broadcast media and certainly less intimate in concept.



According to Fedler (1978) Media were most likely to report events that had just occurred and that were interesting, important and unusual. Because of their emphasis upon the unusual, the media tended to distort rather than mirror reality. The decisions made by the reporters/editors inevitably would be influenced by their background, personality and values, environment, goals, education and style of writing.

Research Methodology

The main objective of this study is to make a comparative study of the current status/ trend of publication and analyse the salience and coverage given to the environmental issues in print media. The content study on environmental journalism with special reference to print media is mainly carried out to study the prominence and importance of environmental issues in the selected news dailies. For this purpose content analysis of environmental news published over recent two years in two dailies- one national and one local- was carried out.

As this study primarily aims at assessing the coverage strategy, trend of environmental related information by the national as well as local dailies, content analysis, which is the tested journalistic measure for such kind of purpose, has been selected as the method or design of the study. The content analysis is a proven journalistic measure / methodology to assess and analyse the media trend in terms of issue coverage and media salience, which include space and comparative prominence given to various media issues.

3.1) Content analysis

According to Klaus (1980) Content analysis is a research technique for making replicable and valid inferences from data to their context. As a research technique, content analysis involves specialized procedures for processing scientific data. Like all research techniques, its purpose is to provide knowledge, new insights, a representation of facts, and a practical guide to action. It is a tool. The sequential nature of content analysis designs has- data making, data reduction, inference, and analysis. These factors lead the content analyst to processes of direct validation, testing for correspondence with other methods and testing hypotheses.

Content analysis is a research tool used to determine the presence of certain words or concepts within texts or sets of texts. Researchers quantify and analyze the presence, meanings and relationships of such words and concepts, then make inferences about the messages within the texts, the writer(s), the audience, and even the culture and time of which these are a part. Texts can be defined broadly as books, book chapters, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, advertising, theater, informal conversation, or really any occurrence of communicative language.

In the website <http://writing.colostate.edu/index.cfm> it is mentioned that to conduct a content analysis on any such text, the text is coded, or broken down, into manageable categories on a variety of levels-word, word sense, phrase, sentence, or theme--and then examined using one of content analysis' basic methods: conceptual analysis or relational analysis. Perhaps due to the fact that it can be applied to examine *any* piece of writing or occurrence of recorded communication, content analysis is currently used in a dizzying array of fields, ranging from marketing and media studies, to literature and rhetoric, ethnography and cultural studies, gender and age issues, sociology and political science, psychology and cognitive science, and many other fields of inquiry.



Additionally, content analysis reflects a close relationship with socio- and psycholinguistics, and is playing an integral role in the development of artificial intelligence. The following list offers more possibilities for the uses of content analysis:

- Reveal international differences in communication content
- Detect the existence of propaganda
- Identify the intentions, focus or communication trends of an individual, group or institution
- Describe attitudinal and behavioral responses to communications
- Determine psychological or emotional state of persons or groups

In journalism research, content analysis is one of the very important methods, enabling the researcher to analyse and understand the content trends of the media. It is a dynamic research method in the sense that the methodology varies widely with respect to the nature and functions of the medium on which research is being conducted. For instance, the methods and components of content analysis with respect to print media would be very much different as compared to that used in case of electronic media like radio or TV. Even within print media, methods and tools would be different for analyzing the contents of news dailies from those used for magazines/journals/books/other forms of print media.

Likewise, content analysis methods vary among electronic media-radio which is essentially appeals to audio sense of the receiver and TV which feeds audio as well as visual sense of the receiver simultaneously. Though, it is true that content analysis also deals with the content aspects like subjects/ issue/information coverage which is general to all types of media, by and large, the methods and tools adopted in the content analysis vary from medium to medium according to the treatment given to the contents or how the raw information is converted into the message for mass reception in a particular medium.

For the present study, content analysis was carried out considering different aspects of environmental issues in print media. An initial study was conducted to make a comparative analysis on current status/trend of publication of environmental related news/ issues in national as well as local dailies. For this, daily editions of the selected newspapers published in two years starting from January 2004 to December 2005 were taken and a thorough content study on environmental issues was conducted.

The coverage aspects of environmental related issues in comparison with the other news items related to politics, sports, entertainment and others in both the selected national as well as local dailies is- was carried out

The researcher studied the two newspapers, ie both the national (English) as well as local (Telugu) dailies of two years. One national daily published in English and one local daily published in Telugu as this study was conducted in Andhra Pradesh state.

It is a general notion that the environmental issue lost out when compared with other news items like entertainment, politics, sports and others. Hence a content study is carried out to find about the coverage trend of the environmental issues in comparison with the other news items.

Secondly a content study on overall coverage of the environmental issue in both the dailies was carried out in which comparison of coverage of environmental issues between two selected dailies i.e the national as well as local dailies was done.



The different components of content analysis carried out on environmental news published in both national as well as local dailies over two years (2004-05) were listed under.

- a. Categories of environmental news /issues covered
- b. Types of environmental news publication (News item / feature stories / articles)
- c. Space allotted for environmental news
- d. Comparative space allotted to environmental news and other news
- e. Lay out and page number of publication of environmental news in the selected dailies
- f. Photographs published along with environmental news
- g. Author categories of environmental news / articles published in the selected dailies

In detail, the content analysis for the above mentioned components is carried out by calculating each component. It is - The sub components which were studied in detail under each of the above main components of content analysis are described below.

a) Categories of environmental news covered by national and local dailies

Categories of news referred to the broad subject area under which the environmental related news published by the selected dailies could be classified. All the published news items related to environmental issues published over two years were identified through content analysis and classified. This component of content analysis would provide information regarding the categories of environmental issues covered as well as the extent of coverage in terms of number of news published under each category in the selected dailies over two years. This analysis would provide an idea on the coverage trend and extent under each category and gaps that were existing in environmental news publishing.

Thus the articles are analyzed and allotted under each category so as to study the different environmental issue and the coverage trend of each category of environmental issue given in the selected news dailies.

b) Type of environmental news

The environmental news or any other news item can be divided into 2 types. A report or feature story.

A report is an account presented usually in detail. It can be a formal account of the proceedings or transactions. It is the news item that happened and is reported immediately for public awareness. A report is the message or write-up on any event or issue that took place in the recent past and is reported for information flow.

A feature story is a prominent or special article, story, or department in a newspaper or periodical. It is a special story written by the reporter on any chosen topic. A feature story covers any specific issue and is published with some research on it. The purpose of feature stories is to promote awareness and to provide information.

This study has provided space for both the reports and feature stories in both selected national as well as local dailies. Thus both reports and feature stories are covered and a content study is carried out with a scope to analyze the publication pattern of environmental information by the national as well as local dailies in terms of its types i.e. news reports or feature stories.



c) Space

The space allotted to articles in any news daily tells about the prominence given to that particular article. Generally, there are preferences and standards set to allot space in any news daily. The column length and column width are different for each article. The area given to each article also plays an important role in describing the salience given to that particular article. Generally, it is assumed that environmental articles loose out in gaining much space in a daily when compared to other articles on politics, sports, entertainment etc. hence the coverage trend in terms of space or area allotted to the given environmental issue. This would give a clear picture of the space of area given to environmental issue and thus one can find out the prominence of the environmental article. The area of the environmental articles is measured in centimeters. The column length and column width are measured using a centimeter scale. This would give the area of the environmental issue in terms of Centimeter Square. Thus the area of the environmental article/ issue is measured.

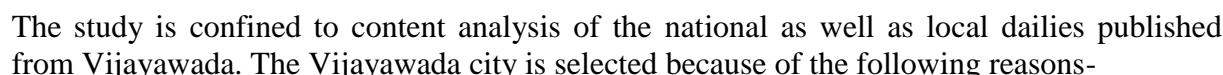
d) Page number

The page number also plays an important role in describing the salience given to any article in a daily. The articles published in page one have much importance than those that are published in other pages. Sometimes, the articles published in special pages like center spread also have much significance. Thus the page number is noted for each environmental issue to find out the prominence and the salience given to that particular environmental issue or article.

In addition to the analysis of the environmental articles, the researcher also took personal interview of the reporters and the editors. The interview schedule is given to the reporters from both English as wells as Telugu dailies. The questions covered various aspects on reporting trend, the importance or prominence that they give in publishing the articles, and others. The schedule has both open and close-ended questions. The reporters were given a choice to express their views on the role of media in publishing environmental articles and the importance that they given in reporting the same to the daily.



Figure No. i- Map of Viayawada



- Third largest city in Andhra Pradesh from where both national as well as local dailies are being published.
- Familiarity of the researcher with the locality

Vijayawada, the heart of Andhra Pradesh, is located between the *Krishna* river and its tributary *Budameru*. Historically considered as the cultural, political and educational centre of the state, it was here that political thinking first originated and evolved. An interesting legend lies behind Vijayawada deriving its name. It is believed that *Arjuna*, of the epic *Mahabaratha*, prayed atop the *Indrakeeladri* Hill and won the blessings of Lord *Shiva*. The name Vijayawada comes from this '*Vijaya*' - victory, while 'Wada' means locality or place. The people of Vijayawada speak the chaste form of ***Telugu***. For the purpose of content analysis, the daily issues of these two newspapers from January 2004 to December 2005 will be selected. As the time available for conducting the field study is limited, the content analysis will only be limited to the environmental related news published during the past two years in these selected dailies.



The selected dailies are published from Vijayawada and have largest circulation when compared to other news dailies that are published from this place. The other reason for selecting the Vijayawada as location of research is the familiarity of the researcher with place. The researcher found the place appropriate to carryout the study successfully due to the availability of the resources and above all familiarity of the place.

3.4 Sampling

Selection of the sample for the current study- two popular dailies- one national (English) and one local (Telugu) dailies are selected for detailed content analysis. The rationale behind the selection of national as well as local dailies is the assumption that the coverage trend with regard to environmental information differs significantly between the national and local dailies.

The national daily selected for the study is “The Hindu” which is the leading English daily in terms of circulation in Vijayawada city. The local daily selected for the study is “Eenadu” which is the leading Telugu daily in terms of circulation in Vijayawada city.

3.4.1 The Hindu

The Hindu, started in 1878 as a weekly, became a daily in 1889 and from then on has been steadily growing to the current circulation of over 1000,000 copies and a readership of over 3 million. The Hindu's independent editorial stand and its reliable and balanced presentation of the news have over the years, won for it the serious attention and regard of the people who matter in India and abroad. The Hindu uses modern facilities for news gathering, page composition and printing. It is printed in twelve centres including the Main Edition at Chennai (Madras) where the Corporate Office is based. The printing centres at Coimbatore, Bangalore, Madurai, Hyderabad, New Delhi, Vizag, Thiruvananthapuram, Kochi, **Vijayawada**, Mangalore and Tiruchirapalli are connected with high speed data lines for news transmission across the country.

3.4.2 Eenadu

More households in the state of Andhra Pradesh wake up to the Eenadu than any other news daily. The heart and soul of Andhra Pradesh, it enjoys a circulation 10,50,659 copies per day and is published simultaneously from 23 printing centers. Making it one of the largest circulated newspaper in the country. Eenadu was conceived for Telugus. A newspaper, which provided the latest news and best, reflected their needs. From the first day to now, for Telugus there are two distinct phases in their lives - before Eenadu and after Eenadu.

The study was conducted on the both newspapers. The dailies of two years starting from January 2004 to December 2005 are considered for the study. The environmental articles/ issues published in this period were considered and studied. Various aspects of the articles as mentioned above in the datasheet are studied for further research.

The environmental issues published in the given period were thus studied under various categorized to analyze the importance and salience given to them. The sample size is considered for a period of two years keeping in mind the time limit given to the researcher to carryout the research.



Results and Discussions

The primary objective of the present research was to analyse the current status/ trend of publication of environmental related news/issues in national as well as local dailies and also to analyse the coverage of environmental related issues in comparison with the other news items related to politics, sports, entertainment etc and also the content of environmental related news published in terms of space and coverage trend. The selected dailies The Hindu and Eenadu, dated from January 2004 to December 2005 were studied for environmental issues.

4.1 Categories of environment

To analyze the coverage of environmental related issues in comparison with the other news items in both national as well as local dailies, the environmental issues were studied extensively and noted down by the researcher. It was seen that nine categories of environmental issue have been identified and noted down for further studies. These nine categories were covering all the topics of environment and have a wide range.

The content analysis of environmental information covered by the two selected dailies over two years had led to the identification of nine categories of coverage in this study. They were 'Pollution' related issues; 'Wildlife and biodiversity' related issues; 'Global environmental issues'; 'Environmental law and policy regulations'; 'Environmental conservation and management'; 'Environmental impacts'; 'Environmental education programmes and awareness campaigns'; 'Environmental activism and public debates', 'Disaster Management'.

4.1.1 Pollution- The first category was concerned with Pollution (undesirable change in the environment, which causes a deleterious effect on the human as well as the other beings) related aspects of air, water and soil. Any news published in the selected dailies pertaining to the 'Pollution' related aspects in the different components of environment such as air, water and soil were considered in this category.

4.1.2 Wildlife and biodiversity related issues- Articles published in newspaper related to wildlife or biodiversity (The variability among living organisms on the earth, including the variability within and between species and within and between ecosystems) issues, such as extinction of species, depletion of biodiversity and special stories on tiger and wildlife reserves were considered under this category.

4.1.3 Global environmental issues- news published related to 'Global environmental issues' such as global warming, ozone depletion and acid rains, and others that have global concern published in selected dailies were considered under this category. The 'Global environmental issues' were generally found to be published in the forms of feature story columns in the selected dailies.

4.1.4 Environmental law and policy regulations. Since the amendment of environmental protection act. Government of India had been enforcing strict rules and regulations to protect environment in one or the other way. These rules and regulations fall under the environmental law. The articles pertaining to various environmental rules and policy regulation published in selected new dailies were considered under this category.



4.1.5 Environmental conservation and management news published related to the protection, preservation, management, or restoration of wildlife and of natural resources such as forests, soil, and water. The news items related to 'Environmental conservation and management' programmes that have been carried out in local area and published in the dailies were considered under this category.

4.1.6 Environmental impacts- Environmental impact was any positive or negative change on physical, chemical or biological factors of environment. The environmental impact analysis was mostly done for many projects to elucidate the negative or positive impacts that would be caused through a proposed project. News articles or feature stories containing information related to environmental impact analysis or assessment were considered under this category.

4.1.7 Environmental education programs and awareness campaigns- the 'Environmental education' programmes and awareness campaigns were mostly organized to increase awareness on environmental issues. Schools, colleges, NGOs and others were mostly involved in such camps. Articles covering the news of such camps and events were covered under this category.

4.1.8 Environmental activism and public debates- any news related to the activist groups working for the cause of environment who were involved in environmental activities and public debates were considered under this category.

4.1.9 Disaster Management- Disaster Management was the discipline which involves preparing, supporting, and rebuilding [society](#) in relation to [natural](#) or [man-made disasters](#). Any news item related to such event was considered under this category.

4.2 Extent of coverage of environmental issues

The following table gives the details of extent of coverage of environmental issues under each category in the selected news dailies. The categories then were ranked accordingly with respect to Hindu and Eenadu dailies.



Table No. i - Extent of coverage of environmental issues by selected national as well as local dailies over two years (2004-2005)

Sl. No.	Issues	Extent Of Coverage					
		HINDU			EENADU		
		NO. OF ARTICLES	PER CENT	RANK	NO. OF ARTICLES	PER CENT	RANK
1	Conservation and management	85	20.6	I	55	38.46	II
2	Wildlife and biodiversity	81	19.6	II	NIL	NIL	NIL-
3	Disaster Management	55	13.3	III	4	2.79	IV
4	Global environmental issues	53	12.8	IV	1	0.6	V
5	Pollution	49	11.8	V	65	45.45	I
6	Environmental law and policy regulations	36	8.7	VI	NIL	NIL	NIL
7	Environmental education	21	5.09	VII	17	11.88	III
8	Environmental activism	19	4.6	VIII	1	0.6	V
9	Environmental impact assessment	13	3.1	IX	NIL	NIL	NIL

From the Table No. i - it could be inferred that, in terms of coverage of environmental issues by the selected national and local dailies, there was a slight variation in the coverage pattern. The environmental issues published in the selected dailies were grouped under nine distinctive categories as mentioned in the table. However, the issues on 'Conservation and management' were covered most frequently, to the extent of one fifths (20.6%) of total issues covered in the national daily. The same issue was also covered by the local daily to the extent of almost two-fifths (38. 46%) of total environmental issues covered. However this was preceded by the issue on 'Pollution' which got the maximum coverage (ranked I with 45.45%) in terms of frequency of publication. At the same time, the coverage of articles on 'Pollution' only got fifth position in national daily.



The issues on 'Wildlife and biodiversity' had been covered widely next to those on 'Conservation and management' in national daily. These articles lost out in local daily and had not been covered in the two years of the study. Similarly, the articles on 'Environmental law and policy regulations' had also not been covered in the local daily during the two years of study where as they were covered satisfactorily in national daily. The 'Global environmental issues' acquired a good coverage when compared to issues on 'Environmental education' and 'Environmental activism'. The issues on 'Environmental education' could get a considerable coverage in local daily next to 'Pollution' and 'conservation and management' respectively. The issues on 'Environmental impact assessment' and 'Environmental law and policy regulation' however not at all covered in local daily, where as in national daily there was a little extent coverage (3.1%)

It could be seen that even though the coverage pattern was differing in the two dailies, the percentage of overage of environmental issues however was significant in local daily. The articles on 'Conservation and management', which were ranked highest in national daily, had a percentage of 20.6 whereas the issues on 'Pollution', which were ranked the highest in local daily have a percentage of 45.45 (half). The articles on 'Environmental conservation and management' had a percentage of 38.46 in local daily standing next to the articles on 'Pollution'. The articles on 'Pollution' in national daily had a percentage of 11.8 which was 33.65% less when compared to local daily. The articles that had least coverage in national daily were 'Environmental impact assessment' with only 3.1 % which were not covered at all in local daily.

Thus it was noticed that the issues which ranked in top in the English daily ranked differently in Telugu daily. But at large, this differentiation is not much and could be compared easily. The issues on environmental conservation management which ranked One in the English daily ranked Two in Telugu daily. Similarly the issues on 'Disaster Management' which ranked Three in the Hindu ranked Four in Telugu daily. Thus it was seen that, the issue shad been covered equally in both the selected dailies. However, some issues like 'Environmental impact assessment' and 'Environmental law and policy regulations' did not find space in Telugu dailies while they were considered to a satisfactory level in the English daily.

The table on the type of news published had the details of number of news reports and feature stories that were published under each category of environmental news in the selected news dailies over the two years of study. The type of news published was calculated in terms of percentages to give a clear idea on the nature of coverage of environmental issues.



Table No. ii- Type of news published related to environmental issue in the selected news dailies

Sl. no.	issues	Type of news published			
		The Hindu		Eenadu	
		news reports	Feature stories	news reports	feature stories
1	Pollution	35 (14.8)	14(7.9)	47(41.9)	18(58.06)
2	Wildlife and biodiversity	34(14.4)	47(26.5)	0	0
3	Global environmental issues	30(12.7)	23(12.9)	1(0.8)	0
4	Environmental law and policy regulations	23(9.7)	13(7.3)	0	0
5	Conservation and management	45(19.14)	40(22.5)	46(41.07)	9(29.03)
6	Environmental impact assessment	8(3.4)	5(2.8)	0	0
7	Environmental education	16(6.8)	5(2.8)	16(14.2)	1(3.2)
8	Environmental activism	16(6.8)	3(1.6)	0	1(3.2)
9	Disaster Management	28(11.9)	27(15.2)	2(1.7)	2(6.4)
	Total	235	177	112	31

* Figures in parentheses indicate percentage

The above table furnishes data regarding the type of publication of environmental news (News report or feature stories) in local as well as national dailies. In this study, it was observed that, there were a total of 235 reports and 177 feature stories in national daily and 112 reports and 31 feature stories in local daily in the period of two years. It was clear from the table that the number of reports were greater when compared to feature stories in the both the dailies. The articles on 'Conservation and management' (45) had more number of reports in national daily as compared to feature stories (40). But the percentage was differing being the highest for feature stories, 22.5%, (one fifth of the total) when compared to reports (19.14%) for the issues on 'Environmental conservation and management'. The feature stories were minimum on 'Environmental activism' (1.6%), whereas the reports were minimum for 'Environmental impact assessment' (3.4%) in national daily. In national daily, the feature story on 'Environmental impact assessment' and 'Environmental education' had equal weightage (2.8%), whereas the reports on 'Environmental education' and 'Environmental activism' had equal weightage (3.1%).



The percentage of reports on 'Pollution' related issues in local daily was very high, 41.9%, (almost half of the total) against those in national daily (14.8%) where as the feature stories on the same was very high in local daily, 58.06%, (more than half) against those in national daily (7.9%). Similarly, the articles on 'Pollution' (47) had more reports in local daily when compared to feature stories (18). The feature stories were maximum on 'Pollution' related issues in local daily and minimum on issues related to 'Environmental education' and 'Environmental activism'. No reports were seen on 'Wildlife and biodiversity', 'Environmental law and policy regulations' and 'Environmental impact assessment' in local daily. In terms of percentages, the feature stories on 'Pollution' in local daily had good coverage when compared to other reports and feature stories in national and local dailies.

The feature stories were mostly covered on 'Wildlife and biodiversity' issues in national daily which were covered in large number when compared to the reports. Where as the same issues, loosed out in local dailies and were not covered in either reports or feature story section.

Though the reports on 'Environmental conservation and management' were almost equal in national and local dailies (45 and 46 respectively), the percentage variation was much higher, one fifth (19.14%) and almost half of the total (41.07%) respectively. Similarly, the percentage of feature stories on environmental conservation in the both dailies in almost equal (22.4% and 29.03%), the number varied distinctly (40 and 9) respectively.

Overall, It could be concluded that all the categories of environmental news were mostly covered by the two selected dailies in the form of 'news reports'. In the national daily, it was observed that though in lesser frequency than 'news reports', the 'feature stories' had appeared with respect to al the categories of environmental news. Whereas, this was not true in case of local dailies.

The following table gives the month wise trend of coverage of environmental news categories over two years in both national as well as local dailies. The issues had been ranked from one to three. At the end of the table, the issues that occurred frequently were noted down.



Table No. iii- Month wise trend of coverage of different environmental issues on priority wise in selected news dailies

Sl. no.	Month	Month wise coverage trend												
		2004							2005					
		The Hindu			Eenadu			The Hindu			Eenadu			
		I	II	III	I	II	III	I	II	III	I	II	III	
1	JANUARY	DM	GEI	WBD, LPR, CM	PO L	CM, EDU	-	POL	WBD	GEI	CM	POL, EDU	-	
2	FEBRUAR Y	CM	DM	GEI, ACT	PO L	CM, EDU	-	GEI, LPR	CM	POL, WBD, EDU, IMP, DM	POL	CM	-	
3	MARCH	GEI, CM	WBD	EDU, DM	PO L, CM	EDU	-	POL	WBD	GEI	CM	POL	-	
4	APRIL	POL	LPR	WBD, DM	PO L	CM	-	WBD	IMP	CM	CM	POL, EDU, ACT	-	
5	MAY	CM	DM	GEI	PO L	CM	-	WBD	POL, EDU	GEI, LPR, CM, ACT	CM	POL, LPR, EDU	-	
6	JUNE	LPR, CM	POL, ACT	WBD, GEI,DM	PO L	CM	ED U	LPR, CM	EDU	WBD	POL, CM	EDU	-	
7	JULY	CM	POL	WBD, EDU, ACT, DM	PO L, CM	-	-	WBD	GEI	POL	POL	CM	EDU, POL	
8	AUGUST	DM	WBD , CM	POL, GEI,AC T	CM	POL	-	CM	WBD , LPR	GEI, DM	POL	EDU	CM	
9	SEPTEMB ER	WBD, CM	GEI, DM	POL, LPR, EDU	CM	POL, GEI	-	CM	DM	GEI, ACT	EDU	POL	CM	
10	OCTOBER	WBD	POL, CM, IMP, DM	GEI	CM	POL, EDU	-	CM	WBD , DM	EDU	POL	DM	CM	
11	NOVEMB ER	CM	POL	WBD	CM	POL	-	CM	POL	WBD, GEI	CM	EDU	-	
12	DECEMB ER	GEI	POL, WBD	LPR	CM	POL	-	DM	GEI	CM	POL	CM	DM	
		CM	POL	WBD	CM	POL	ED U	CM	WBD	GEI	CM	POL	EDU	



The Table No. iii shows the trend of coverage of environmental issues in both the selected dailies in different months over two years. It was noticed that in both the years, the issues on 'Environmental conservation and management' were covered almost evenly in all the months in both national and local dailies. In The Hindu 2004, the issues on 'Environmental conservation and management' headed the other issues followed by 'Pollution' and 'Wildlife and biodiversity'. In Eenadu 2004, the issues on conservation and management were the majority followed by those on 'Pollution' and 'Environmental education'.

In The Hindu 2005, the issues on 'Environmental conservation and management' were in large number followed by those on 'Wildlife and biodiversity' and global environmental issues. In Eenadu 2005, the issues on conservation and management were the majority followed by those on 'Pollution' and 'Environmental education' same as Eenadu 2004. But it is to be noted that in Eenadu 2004, the issues on 'Disaster Management' and 'Environmental law and policy regulations' were also seen frequently occurring.

The issues like 'Environmental conservation and management' were equally distributed in majority throughout the two years in both the selected dailies. These were followed by the other issues like 'Wildlife and biodiversity' and 'Environmental education'. Issues like 'Environmental law and policy regulations', 'Environmental activism' and others were covered in most of the months of two years study. From this table, it can be seen that, almost all the articles were given equal weightage in both the dailies in the years of the study.

4.3 Coverage trend in terms of space

The space allotted to any environmental article describes the salience given to that particular article in the print media. In general, the issues on environment find less space as compared to other articles in the news dailies. Thus the space allotted to the environmental articles in the selected dailies was measured.

The table had the details of coverage trend in terms of average space per day of various environmental issues month wise in the selected news dailies during the two years of study. The issues having maximum space are noted down.



Table No. iv- Month wise coverage of Environmental Issues in terms of average space allotted per day (Maximum) by selected national as well as local dailies

Sl.no	Month	Issues allotted maximum space per day			
		2004		2005	
		The Hindu	Eenadu	The Hindu	Eenadu
1	JAN	DM	POL	POLL,EDU	CM, EDU
2	FEB	LPR	POL	WBD	CM, EDU
3	MAR	WBD,CM	POL, CM	EDU,DM	EDU
4	APR	POL	POL	CM,IMP	CM
5	MAY	CM	POL	WBD	CM
6	JUN	LPR,CM	POL	WBD,GEI,EDU,DM	EDU
7	JUL	CM	POL-CM	LPR	-
8	AUG	DM	CM	ACT,GEI,POL	POL
9	SEP	WBD,CM	CM	POL,LPR,EDU	POL, GEI
10	OCT	WBD	CM	GEI	POL, EDU
11	NOV	POL	CM	,EDU	POL
12	DEC	GEI	CM	CM, IMP, ACT	POL

From the Table No. iv- it could be noticed that the space allotted with respect to different categories of environmental news widely differed between national and local dailies. The table depicts the categories of news which were given maximum space in each month over two years in both the selected dailies. It could be clearly seen that the issues on 'Wildlife and biodiversity', conservation and management and 'Disaster Management' were given equal and maximum space in Hindu 2004 followed by issues on 'Pollution' and 'Environmental law and policy regulations'. Where as it could be inferred that nearly equal wieghtage was given to almost all the issues in The Hindu 2005. In contrast, in case of Eenadu 2004, the maximum of the space was allotted to issues on 'Pollution' and conservation and management. Whereas in Eenadu 2005, articles on 'Pollution', conservation and management and 'Environmental education' headed over the others. It was seen that, most of the issues like 'Environmental law and policy regulations', 'Wildlife and biodiversity' and 'Environmental impact assessment' issues have not found any space in Eenadu in the both the years of study.

During the year 2004, issues on 'Environmental conservation and management and environmental 'Pollution' were allotted maximum space in both selected dailies whereas the issues on 'Environmental conservation and management and 'Environmental education' were allotted maximum space during 2005 in both the selected dailies.



The table had the details of coverage trend in terms of month wise average space allotted per day to various environmental issues wise in the selected news dailies during the two years of study. The issues having minimum space are noted down.

Table No. v- Month wise coverage of Environmental. Issues (Minimum) by selected national as well as local dailies

Sl.no	Month	Issues allotted minimum space per day			
		2004		2005	
		Hindu	Eenadu	Hindu	Eenadu
1	Jan	LPR, CM,IMP,EDU,ACT	POL, EDU	POL	CM
2	Feb	POL, WBD, IMP, EDU, DM	CM	GEI, LPR	POL
3	Mar	LPR, CM,ACT,DM	POL	POL	CM
4	Apr	POL,LPR,EDU, ACT	POL, EDU, ACT	WBD	CM
5	May	GEI, LPR, CM,ACT	POL, LPR, EDU	WBD	CM
6	Jun	POL, ACT	EDU	LPR, CM	POL, CM
7	Jul	IMP, ACT	EDU	WBD	POL
8	Aug	EDU	CM	CM	POL
9	Sep	WBD	DM	CM	EDU
10	Oct	LP, GEI, IMP, ACT	POL, CM	CM	DM
11	Nov	ACT	EDU	CM	CM
12	Dec	IMP, EDU	DM	GEI, LPR	POL

From Table No. v- it could be inferred that the issues on ‘Environmental law and policy regulations’, ‘Environmental impact assessment’ ‘Environmental activism’ and ‘Environmental impact assessment’ had been allotted less space as compared to the others. Most of the issues on these topics were given less space in most number of the months during the year 2004 in national daily. However, issues on ‘Wildlife and biodiversity’ and ‘Environmental conservation and management were allotted minimum space in the selected national daily during the year 2005.

In the case of local daily, the issues on ‘Environmental education’ and ‘Environmental activism’ and ‘Environmental law and policy regulations were given minimum space as compared to others in local daily during the year 2004. Similarly, the issues on ‘Environmental education’ and ‘Disaster Management’ were allotted less space in the year 2005 in selected local daily. Issues on ‘Pollution’ were given only minimum space in both the selected dailies.



The table below depicts the details of month wise coverage trend in terms of average space per day in sq.cm allotted to environmental news in comparison with other news over two years in selected dailies. The issues having maximum space are noted down.

Table No. vi- Month wise coverage of Environmental Issues (maximum) by selected national as well as local dailies

Sl.No	Month	Average Space Per Day In Sq. cm			
		2004		2005	
		Hindu	Eenadu	Hindu	Eenadu
1	Jan	31.25	66	33	42
2	Feb	36.4	50	25	71
3	Mar	30.7	42	35.7	66
4	Apr	33	80.1	26	50
5	May	45.4	80	46	40
6	Jun	21.4	57	43	45
7	Jul	29.4	50	37	50
8	Aug	36.6	60	38	58
9	Sep	26.6	50	50	41
10	Oct	33.3	66	25	50
11	Nov	27.7	60	31	75
12	Dec	28.5	57	20	57

During the month of January 2004, it was seen that on an average 31.25 sq.cm of space was allotted in national daily where as an average of 66 sq.cm was allotted in local daily. The space variation was seen among different months though the maximum space of each month had been noted down. It was clearly seen that, Maximum space was allotted to the coverage on environmental issues during the month of May (45.4 sq.cm) in national daily and in April (80.1 sq.cm) in local daily. Least space was allotted during the month of June (21.4sq.cm) in national daily and (42 sq.cm) in local daily. However during the year 2004, considerable space was allotted during the months of July, September, November and December in national daily and February, July and September in local daily.

During the month January 2005, on an average 33 sq.cm of space was allotted to environmental issues in national daily whereas 42 sq.cm was allotted in local daily. Maximum space was allotted to the coverage in environmental issues during the month of May (46 sq.cm) in national daily and in November (75 sq.cm) in local daily. Least space was allotted during the month of December (20sq.cm) in national daily and in September (41 sq.cm) in local daily. However during the year 2004, considerable space was allotted during the months of March, July, and August in national daily and April, July and October in local daily.

It was seen that considerable space was allotted to both the dailies during the month of May 2004 and June 2005. It could also be seen from this table as well as the ones depicted before that though the coverage of environmental news in terms of number of reports and range of coverage of environmental news were lesser in local dailies as compared to national dailies, the coverage in terms of space was more in local dailies as compared to national dailies.



The table furnishes the details of coverage trend in terms of average space per day in terms of percentage of various environmental issues monthly wise in the selected news dailies during the two years of study. The issues having minimum space are noted down.

Table No. vii- Month wise coverage of Environmental. Issues (Minimum) by selected national as well as local dailies

Sl.No	Month	Average Space Per Day In sq. cm			
		2004		2005	
		Hindu	Eenadu	Hindu	Eenadu
1	Jan	6.25	16.6	6.6	28.5
2	Feb	7.6	25	6.25	25.87
3	Mar	7.6	14.2	7.1	33.3
4	Apr	8.3	20	4.3	16.6
5	May	9.0	20	6.6	20
6	Jun	7.1	14.2	6.4	76
7	Jul	5.8	-	3.5	10
8	Aug	9.0	40	4.7	25
9	Sep	6.6	25	7.6	8.1
10	Oct	6.6	16.6	6.25	25
11	Nov	5.5	40	5.2	25
12	Dec	5.5	33.3	3.3	14.2

The Table No. vii- is the month wise minimum average space per day in sq.cm allotted to the environmental issues in selected news dailies during the years 2004 and 2005.

During the month of January 2004, it was seen that on an average 6.25 sq.cm of space was allotted in national daily where as an average of 16.6 sq.cm was allotted in local daily. Though the list included the least space allotted to issues on environment, it could be inferred that, variation existed within the months of least spaces. Least space was allotted during the months of November and December (5.5 sq.cm) in national daily and during March and June (14.2 sq.cm) in local daily. However during the year 2004, least space was allotted during the months of November and December in national daily and March and June in local daily.

During the month January 2005, on an average 6.6 sq.cm of space was allotted to environmental issues national daily whereas 25 sq.cm was allotted in local daily. Least space was allotted during the month of December (3.3 sq.cm) in national daily and during September (8.1 sq.cm) in local daily. However during the year 2004, least space was allotted during the months of July and December in national daily and during September in local daily.

It was seen that least space in terms of sq.cm was allotted to both the dailies during the month of May 2004.



The table furnishes the details of coverage of environmental issues on average per day when compared to other issues in the selected dailies. The coverage of the environmental issues was given in terms of percentages month wise.

Table No. viii- Month wise coverage of Average space per day in terms of percentages as compared to other issues in selected issues.

Sl.No	Months	2004			
		HINDU	percentage	EENADU	Percentage
1	JAN	105.14	0.26	24.24	0.13
2	FEB	101.77	0.25	44.60	0.24
3	MAR	63.54	0.16	3.76	0.02
4	APR	62.93	0.16	51.86	0.28
5	MAY	65.99	0.16	28.43	0.15
6	JUN	115.97	0.29	42.01	0.23
7	JUL	99.02	0.25	9.91	0.05
8	AUG	77.50	0.19	30.51	0.16
9	SEP	106.17	0.27	24.03	0.13
10	OCT	97.23	0.24	33.79	0.18
11	NOV	111.91	0.28	26.76	0.14
12	DEC	131.89	0.33	17.03	0.09

Table No. viii continued..

Sl. No	Months	2005			
		HINDU	Percentage	EENADU	Percentage
1	JAN	91.66	0.23	17.87	0.09
2	FEB	96.96	0.24	46.97	0.25
3	MAR	77.90	0.19	18.58	0.10
4	APR	134.59	0.34	176.5	0.97
5	MAY	109.82	0.27	21.42	0.11
6	JUN	188.64	0.48	64.11	0.35
7	JUL	197.29	0.50	65.19	0.36
8	AUG	126.62	0.32	39.22	0.21
9	SEP	93.67	0.23	48.23	0.26
10	OCT	97.24	0.24	17.47	0.09
11	NOV	119.9	0.30	8.39	0.04
12	DEC	208.47	0.53	40.49	0.22



The above table furnishes the details of average space per day allotted to environmental issues as compared to other news item in the selected dailies. It was observed that, the total space per day for The Hindu is 39240 sq.cm where as the same for Eenadu is 18105 sq.cm.

During 2004, it was observed that the averages space allotted for the environmental issues as compared to other articles was higher during the month of December (0.33%) in the Hindu and April (0.28%) in Eendau. Least space was allotted to environmental issues as compared to other during the months of March, April and May (0.16%) in The Hindu and in March (0.02%) in Eenadu.

During 2005, it was observed maximum space was allotted to environmental issues as compared to others was during the month of July (0.50%) in The Hindu and April (0.97%) in Eenadu. Least space was allotted during March (0.19%) in the Hindu and in November (0.04%) in Eenadu.

Hence it could be inferred from the above table that the average space per day allotted to environmental issues as compared to others was comparatively low in both the selected dailies during the two years of study.

4.4 Layout and page number

The lay out of particular news story in the daily reflects the prominence or salience given to the news by the editor of the news paper. The page numbers and the position (upper-half or lower-half) of publication together determine the lay out. Though the modern news papers have particular page numbers allotted for different categories news stories, Usually any news story published in front or middle or back pages and in upper –half of the any page are considered to be prominent or got better salience. The table No. 9 has the details of layout of publication of environmental issues in the selected news dailies over two years. The layout in terms of upper-half or lower-half was identified and then converted into percentage. The frequent page numbers in which environmental news published in both national as well as local dailies was also studied.

Table No. ix- Layout and Page numbers of environmental issues published in selected news dailies

Sl.No	Layout	Hindu 2004	Eenadu 2004	Hindu 2005	Eenadu 2005
1	Upper half	106	53	147	56
2	Lower half	70	11	94	34
3	Frequently occurring Page no.	3,8,11,13,14	4,8,10	3,4,8,9,11,13,14	4,8,14



The above table reveals the layout and page numbers of environmental issues published in the selected news dailies during the year 2004 and 2005. It was observed that out of 168 articles published in The Hindu during the year 2004, 106 articles occupied upper half of the page whereas 70 of them occupied lower half of the page. Similarly out of 64 articles published in local daily during the year 2004, 53 articles occupied upper half of the page whereas 11 of them occupied lower half of the page.

It was also observed that out of 241 articles published in national daily during the year 2005, 147 articles occupied upper half of the page whereas 96 of them occupied lower half of the page. Out of 81 articles published in local daily during the year 2005, 56 articles occupied upper half of the page whereas 34 of them occupied lower half of the page.

Hence it could be clearly seen that most of the articles on environmental issues published in selected dailies during the period 2004-2005 occupied the upper half of the page which reveals the prominence or salience given to the publishing of environmental articles.

Similarly it could be also seen that the environmental news / articles were published frequenting in the page numbers 3,8,11,13,14 in national daily during the year 2004 whereas they were frequently seen in the pages 4,8,10 in local daily during the same year. It was observed that the articles that were published in national daily during the year 2005 were frequenting in the pages 3,4,8,9,11,13,14 whereas they were frequently seen in the pages 4,8,14 in local daily. It also should be noted, though the above were the page numbers of the selected dailies in which the environmental news were most frequently published, the news were usually found to be spread over in almost all the page numbers during the two years period of study.

4.5 Photograph

Undisputedly, any news story published along with photographs is prominently seen by the readers or their salience is more. This is particularly true with respect to news stories related environment, which otherwise attract less attention of the general readers. The table below had the details in percentages of the environmental issues that were published along with the photographs in the selected news dailies during the two years of study.

Table No. x- Details of environmental articles published with photographs

<u>Dailies</u>	2004			2005		
	Total no. of articles published	Articles with photographs	percentage	Total no. of articles published	Articles with photographs	percentage
THE HINDU	176	58	32.85	241	58	24.06
EENADU	64	13	20.3	90	46	51.11



Table No. x- reveals the details of environmental articles published with photographs in selected dailies during the year 2004-2005. It was clearly seen that out of 176 articles published during the year 2004, only 58 of them were accompanied by photographs in national daily whereas out of 64 articles that were published in local daily, only 13 of them carried photographs. Hence it was noticed that 32.85% of articles published in national daily during the year 2004 were accompanied with photographs whereas 20.3% of articles had photographs in local daily.

It was observed that out of 241 articles published during the year 2005, 58 of them were accompanied by photographs in The Hindu whereas out of 90 articles that were published in Eenadu, 46 of them carried photographs. Hence it was seen that 24.06% of articles published in national daily during the year 2005 are accompanied by photographs whereas 51.11% have photographs in local daily.

Summary and conclusion

5.1 Preamble

This study on environmental journalism in selected news dailies with particular reference to print media was taken up primarily to assess the current status of coverage of environmental related news both in national as well as local news dailies. Also the assessment of comparative trend of covering environmental news versus other news in the selected dailies will facilitate to suggest future strategies for environmental journalism.

Environmental journalism is the collection, verification, production, distribution and exhibition of information regarding current events, trends, issues and people that were associated with the non-human world with which humans necessarily interact. To be an environmental journalist, one must have an understanding of scientific language and practice, knowledge of historical environmental events, the ability to keep abreast of environmental policy dissuasions and the work of environmental organizations, a general understanding of current environmental concerns, and the ability to communicate all of that information to the public in such a way that it can be easily understood, despite its complexity.

5.2 Objectives

- To make the comparative study of the current status/ trend and salience of publication of environmental related news/issues in selected national as well as local dailies.



5..3 Research Methodology

The main objective of this study was to make a comparative study of the current status/ trend of publication and analyse the salience and coverage given to the environmental issues in print media. The content study on environmental journalism with special reference to print media was mainly carried out to study the prominence and importance of environmental issues in the selected news dailies. For this purpose content analysis of environmental news published over recent two years in two dailies- one national and one local- was carried out. Simultaneously interactive exploration with concerned print media personnel was also carried out in order to know their perception regarding the publication of environmental news.

As this study primarily aims at assessing the coverage strategy- trend of environmental related information by the national as well as local dailies, content analysis, which was the tested journalistic measure for such kind of purpose, had been selected as the method or design of the study. The content analysis was a proven journalistic measure / methodology to assess and analyse the media trend in terms of issue coverage and media salience, which include space and comparative prominence given to various media issues.

For the present study, content analysis was carried out considering different aspects of environmental issues in print media. An initial study was conducted to make a comparative analysis on current status/trend of publication of environmental related news/ issues in national as well as local dailies. For this, daily editions of the selected newspapers published in two years starting from January 2004 to December 2005 were taken and a thorough content study on environmental issues was conducted.

The coverage aspects of environmental related issues in comparison with the other news items related to politics, sports, entertainment and others in both the selected national as well as local dailies was- was carried out

The researcher studied the two newspapers, ie both the national (English) as well as local (Telugu) dailies of two years. One national daily published in English and one local daily published in Telugu as this study was conducted in Andhra Pradesh state.

5.4 Salient findings of the study

The content analysis of 412 news items in The Hindu and 143 in Eenadu that were identified, exposed many facts related to the publishing of environmental issues in the print media.

5.4.1 Content analysis

To analyze the coverage of environmental related issues in comparison with the other news items in both national as well as local dailies, the environmental issues were studied extensively and noted down by the researcher. It was seen that nine categories of environmental issue shave been identified and noted down for further studies. These nine categories were covering all the topics of environment and were have a wide range.



5.4.1.1 Extent of coverage

a) The content analysis of environmental information covered by the two selected dailies over two years had led to the identification of nine categories of coverage in this study. They were 'Pollution' related issues; 'Wildlife and biodiversity' related issues; 'Global environmental issues'; 'Environmental law and policy regulations'; 'Environmental conservation and management'; environmental impacts; 'Environmental education' programmes and awareness campaigns; environmental activism and public debates, disaster management.

b) It was inferred that, in terms of coverage of environmental issues by the selected national and local dailies, there was a slight variation in the coverage pattern. The environmental issues published in the selected dailies were grouped under nine distinctive categories. However, the issues on 'Conservation and management' were covered most frequently, to the extent of one fifths (20.6%) of total issues covered in the national daily.

c) The same issue was also covered by the local daily to the extent of almost two-fifths (38.46%) of total environmental issues covered. However this was preceded by the issue on "Pollution" which got the maximum coverage (ranked I with 45.45%) in terms of frequency of publication. At the same time, the coverage of articles on "Pollution" only got fifth position in national daily.

d) Thus it was noticed that the issues which ranked in top in the English daily ranked differently in Telugu daily. But at large, this differentiation is not much and could be compared easily. The issues on environmental conservation management which ranked One in the English daily ranked Two in Telugu daily. Similarly the issues on disaster management which ranked Three in the Hindu ranked Four in Telugu daily.

e) Thus it was seen that, the issue shad been covered equally in both the selected dailies. However, some issues like Environmental Impact assessment and Environmental Law and Policy regulations did not find space in Telugu dailies while they were considered to a satisfactory level in the English daily.

5.4.1.2 Coverage trend

- a) The comparative study of the current status/trend of publication of environmental related news/issues in selected national as well as local dailies revealed that there was a good coverage of the issues on Conservation and Management which were covered most frequently in national daily. The issues on wildlife and biodiversity had been covered widely next to those on Conservation and Management in national daily.
- b) These articles lost out in local daily and had not been covered in the two years of the study. Similarly, the articles on Environmental Law and Policy regulations had also not been covered in the local daily during the two years of study where as they were covered to a good extent in national daily.
- c) The Global Environmental Issues acquired a good coverage when compared to issues on Environmental Education and Environmental Activism. The issues on environmental education could get a considerable coverage in local daily next to Pollution and Conservation and Management respectively.



- d) The issues on Environmental Impact Assessment and Environmental Law and Policy Regulation however not at all covered in local daily, where as in national daily there was a little extent coverage.
- e) Overall, It could be concluded that all the categories of environmental news were mostly covered by the two selected dailies in the form of 'news reports'. In the national daily, it was observed that though in lesser frequency than 'news reports', the 'feature stories' had appeared with respect to al the categories of environmental news. Whereas, this was not true in case of local dailies.
- f) Hence it could be inferred from the above table that the average space per day allotted to environmental issues as compared to others was comparatively low in both the selected dailies during the two years of study.

5.4.1.3 Salience

- a) During the year 2004, issues on environmental conservation and management and environmental pollution were covered maximum in both selected dailies whereas the issues on environmental conservation and management and environmental education were allotted maximum space during 2005 in both the selected dailies.
- b) It was noticed that the space allotted to articles in any newspaper differ from one another. It was seen that the issues on wildlife and biodiversity, conservation and management and disaster management were given equal space in Hindu 2004 followed by issues on pollution and environmental law and policy regulations. Whereas in Eenadu 2004, the majority of the space was allotted to issues on pollution and conservation and management. Equal wieghtage was given to almost all the issues in The Hindu 2005 which was clearly seen.
- c) In Eenadu 2005, articles on pollution, conservation and management and environmental education headed over the others. It was seen that, most of the issues like environmental law and policy regulations, wildlife and biodiversity and environmental impact assessment issues had not found any space in Eenadu in the both the years of study.
- d) It was also noticed that the issues on environmental law and policy regulations, environmental impact assessment environmental activism, and environmental impact assessment had been allotted less space when compared to the others.
- e) Most of the issues on these topics were given less space in maximum number of the months during the year 2004 in national daily. However, issues on wildlife and biodiversity and environmental conservation and management were allotted less space in the selected national daily during the year 2005.
- f) In the case of local daily, the issues on environmental education and environmental activism and environmental law and policy regulations were given minimum space when compared to others in local daily during the year 2004. Similarly, the issues on environmental education and disaster management were allotted less space in the year 2005 in selected local daily.
- g) Issues on pollution were given less space in both the selected dailies. However during the year 2004, considerable space in sq.cm was allotted during the months of July, September, November and December in national daily and February, July and September in local daily.



5.4.1.4 Average Space

- a) During the year 2004, issues on 'Environmental conservation and management and environmental 'Pollution' were allotted maximum space in both selected dailies whereas the issues on 'Environmental conservation and management and 'Environmental education' were allotted maximum space during 2005 in both the selected dailies.
- b) 'Environmental education' and 'Disaster Management' were allotted less space in the year 2005 in selected local daily. Issues on 'Pollution' were given only minimum space in both the selected dailies.
- c) It was seen that considerable space was allotted to both the dailies during the month of May 2004 and June 2005. The coverage of environmental news in terms of number of reports and range of coverage of environmental news were lesser in local dailies as compared to national dailies, the coverage in terms of space was more in local dailies as compared to national dailies.
- d) During the year 2004, least space was allotted during the months of November and December in national daily and March and June in local daily.
- e) However during the year 2004, least space was allotted during the months of July and December in national daily and during September in local daily.
- f) It was seen that least space in terms of sq.cm was allotted to both the dailies during the month of May 2004.
- g) Most of the articles on environmental issues published in selected dailies during the period 2004-2005 occupied the upper half of the page which reveals the prominence or salience given to the publishing of environmental articles.
- h) Though the above were the page numbers of the selected dailies in which the environmental news were most frequently published, the news were usually found to be spread over in almost all the page numbers during the two years period of study.

5.5 Suggestions

- a) The government officials should be strictly involved in dissipating the information on environment through print media.
- b) Media should cover several environmental issues periodically
- c) The correspondents in the print media should try to report on environmental news without fail periodically.

5.6 Implications of the study

The study would help in analyzing the role of print media in publishing the articles on issues related to environment. This can be used for further studies in the future.

The finding of the study would also help us to know the present status/trend of publication of environmental related news in both national as well as local dailies. It also would provide insight on the comparative status of publication of environment related information that of with other news items. Based on these findings, the study would also recommend to the media regarding the publication of environmental information and also specify the role of media in general to create public awareness on crucial environmental issues.



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A RESEARCH ON EVALUATING THE NEWSPAPER PHOTOGRAPHS FROM THE POINT OF ENVIRONMENTAL CONSCIOUSNESS

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Starting from the prehistorical era preservation of images had been an utopic ideal for human being. Since the 19th century the art of photography has been used in journalism. Up to now increasingly photography has not lost its importance and wide effect on social affairs. Environmental issues nowadays gain importance since we have only one world with limited natural sources. To protect the environment and to provide better conditions legal, formal-informal organizations, institutions and people are on charge. Media, being the most powerful means of communication TV, newspapers and magazines function to a great extent. Photographs are one of the most effective elements in presenting news, especially in printed media where people can look – re-look. Only if the photographs are attractive enough and appeal to the people's mind, emotions, and senses are the news valuable. Photographs are also the most important evidences for the credibility of the story the news carries. Photographs let people grasp the nature of the news and realize the truth. In certain circumstances people even do not read the news, instead they just look at the photograph. Visual images are stronger than words and from the point of ethics it does not matter if they taken from archives, agencies, or individuals. This reality brings about the fact that the *Environment's Survival and Sustainability* can be organized with the accurate use of printed media. Being a social and public service medium all papers can act for the sustainability of the environment. Secondly the critical role of the printed media should be questioned. In order to analyze the photographs related to the subject matter newspapers will be chosen, then the printed photographs will be analyzed, if they show the environment or not, to what extent they are related to the news, have photograph credit, reveal the real atmosphere, more precisely if they serve for the sustainability of the environment. Multiple-reading and some cocepts of semiotics is chosen as the method of the study. In doing so, this paper tries to reach a brief workable understanding of *Environment's Survival and Sustainability and the importance of photographs*. After a brief discussion of what the social situation is several photographs will be analyzed revealing how these contribute the sustainability of the environment.

Key Words: *photography, environment, sustainability.*



1. INTRODUCTION

Today people live in a visually intensive society and a world of spectacular and exciting images. They are bombarded with an orderly and continuously stream of visual simulation from all manner of media every day. They see mediated images more often than they read words. Images sell everything.

The world is surrounded mediated images in such a way that this has never been witnessed in the history of mass communication. Every era has expressed itself in its own way. Antiquity was the time of legends, epics and mythical narratives. During the sovereignty of this era, meaning was constructed with the word and its peculiar rules. Through the permanency of writing as opposed to the fleeting character of the word has grown to be the symbol of authority and power, literary narrative which was developed together with the together with the Enlightenment and the invention of printing process were brought out the freedom of written language. Whereas writing was fundamental to the construction process of meaning and the meaning itself at that time with the invention of instruments like photograph, cinema and television which are user to record the still and moving images, the whole world has been caught up in an ever-flowing process, which can only be explained through the unique rules of an audio-visual language. When images gradually maintain their supremacy, in mass communication the written culture has been replaced by a visual culture. (Lester 2000)

Signs can be written and/or oral, words or images. Semiotics analyses the images in media. For the analysis of visual images visual semiotics is the most popular. It emphasizes the ways visuals communicate and the system dominating their usage. Indirectly associating with culture, semiotics enquires into the ways through which the meaning is created rather than investigating what it is. (Parsa & Parsa 2002:79) In this paper, semiotics is used as methodology. In one week period almost 5000 photographs will be inspected, if they show the environment or not, to what extent they are related to the news, have photograph credit, reveal the real atmosphere, more precisely if they serve for the sustainability of the environment.

2. ELECTRONIC MEDIA, REALITY AND THE ROLE OF THE PHOTOGRAPHS

"There can be no words without images." Aristotle

"The visual reality cannot tolerate critical discourse, explanation, repetition or consideration. All these require a process but visual images involve me, they make me turn to myself, be egoistic," says Jacques Ellul. Similarly we can realize that every tv channel is in race to give the latest live news. Giving latest live news is more important than how and why the event occurred. By the first impressions journalist gives wrong knowledge. It does not matter. Because to be there, to get the visual support or to take the photograph of the event is more important than the accurate knowledge. This is the success and priority of the visual media, that is tv and internet broadly and newspapers and magazines partially.

What we watch as news lasts in one minute or two. We are under information bombard. The news comes and goes, but one thing we can remember: the visual photographs, images. We do not remember why Lady Di died in an unfortunate car accident but we definitely remember the photograph of the crashed car in the tunnel. This is simply because to see is to understand.



This fast way of news making has changed the traditional news making. To give news has become to make the news watched. That is record the news immediately and put the cassette to the air. By the time the audience watch, they will understand the event. In this way there is no need for the reporter or the journalist. Only cameraman or the photo journalist can make the news, or the journalist is only a witness. (Ramonet 2000: 72) In today's electronic media words and texts are not so important as the images. (Ramonet 159)

Then how can an image be good to be in media? Since photographs appeal to the senses and emotions and we are interested in the intellectual properties of people there seems to be no answer for this question. However the quality of a photograph is measured by the effect it made on the audience. In media, editors or the directors must choose the good photographs from the ordinary ones. A good photograph :

- * tells the truth,
- * tells a story,
- * attracts attention,
- * be memorable.

Topçuoğlu proposes several advices for a news photograph:

- * In a single photo there must be at most 5 people.
- * A photo journalist must be experienced and professional.
- * Film must be used sufficiently. Each photo must support the quality factor.
- * Police record like photographs and the photographs taken like in front of a black wall should be avoided.
- * The background of the story must be used and the realtion must be clarified. For example if the news is about the crowded classrooms, the photo must be taken in a crowded classroom.
- * In order to attract more attention the photo must be taken high, low or narrow angles.
- * When and wehereever possible stage scenery must be used.
- * Direct flash should be avoided, insted natural light and portable flash must be used.
- * Photograph must show the event, for example while the scouts are planting or watering a tree.

Nowadays each medium has its photograph policy. Actually they must have because the written or virtual policy prevents the photographers from taking bad and unsuitable photos. (Topçuoğlu 1992)

Louis Jacques Mande Daguerre puts forward the relationship between social change and photography. Documentary photography stands for the objective reality. It can be dated back the invention of the photograph. It does not aesthetes the environment and carry a comment. Photograph is an illusion and re-presentation of the reality, however, it does not carry a message. Social documentary photograph's aim is the social change and naturally its main concern is the social change. It is more than a witness, it tries to effect people. Social documentary photography's main concern is to deal with the social issues. (<http://www.lucy.ukc.ac.uk/becker.html>) It has some characteristics:



* Aims and Objectives: For example the same subject can be photographed by two different people. One takes the photograph to improve the social conditions, the other wants only to take it. The previous one is the social documentary, latter is the documentary. From the point of the protection and sustainability of the environment social consciousness gains importance. Social documentary photographs create an atmosphere in which social issues gain importance.

* Mass Presentation: Social documentary photography is not individual or personal. Photographs lacking the chance of printing cannot be regarded as social documentary. All the media must be remembered from books to web sites. However media ignores the social issues. For the survival of the environment media is not a vehicle, it is an obstacle.

* Institutional Structure: Photographers are weak themselves. In order to make the whole world change one must be stronger, more powerful and must be a part of a bigger part of the world. These are institutions which support the photographers.

* Exhibition Medium: No photographs can be defined as social documentary if they are not printed, published, broadcast or exhibited. It is a natural fact of social documentary. In order to affect people it should be seen by the people. Then the subtitle, text which accompanies the photo, and the institution which presents it affect the photo. (Stange 1989: 16)

2.1. On Semiotics

Semiotics is the science of signs and semiotic analysis have been using in various fields including communication. Visual semiotics is a new branch to analyze how the visual images are used to produce meaning. The sign is a key term in any semiotics. A sign is simply anything that stands for something else. The stands for process is the point where meaning is created both through encoding by the source and decoding by the receiver. (Moriarty 1994) Then a sign can be a word, a sound, or a visual image. (Saussure 1985) According to semiotic approach signifier and signified which altogether make up the sign cannot be separated.

3. THE USE OF PHOTOGRAPHS IN PRINTED MEDIA

Being a mass media photographs should be seriously taken into consideration just as written texts. There must be visual editors in printed media. Either the photograph or the text? The criteria about the reply is the visual proportion and it is a number from 1 to 100. If the news to be published is the TBMM's meeting on 2008, the visual proportion is 0. Because there is no possible way to take a photograph of the meeting.

Printed media uses three types of photographs:

- * News photograph, to let people know, understand. For example, if we want to show people's loose attitude on the protection of the environment, a photograph of a burning forest in Kaş or Muğla can be printed.
- * Colorful photograph shows the event. It doesn't aim at giving knowledge. For example, news about Greenfield can be accompanied by a photograph of the nature, a protest show, etc.
- * Coceptual photograph is used to grasp the main point or theme of the cocept that will be used as news. For example a photo of the forest that was completely burned may show the problem of movement to a city. (Gezgin 89-91)



Printed media use photographs. The main problem is to get an equal understanding. If we are here to discuss the importance of photographs and to attract attention to the survival and sustainability of the environment, one sentence is outstanding: A single photograph is more recollectable, refers to long term memory because people remembers better the things they see rather than those that they read. Images mean a lot. They are simple to understand. Still images are paintings, drawings and photographs. Media photographs encourage expectations since they are more dramatic and vivid than the wirtten or verbal discourse. (Dyer 1982:82) The daily life consists of symbols: logos, trademarks, marks, billboards. All these visual things direct the lives of the people. It is considered as the simplest way of giving messages.

Things or objects gain their meaning when they are related to each other and they are distinguished in this way. Comments are quite personal but when somebody looks at a single photograph, he starts to think about. A photograph can have a metaphor or functions as a metaphor. Namely, a red rose stands for love, passion; white color symbolizes pureness, and so on. In classical communication studies, a message is encoded by the source, transmitted through a channel and decoded by a receiver. In photography the message is put into the images or the image itself is the message. In its own way photographs have a truth value of their own and functions as a catharsis for the association of previous experiences, other photographs; in this way in any case photographs had people thought for a moment about the subject they represent. (Refo)

Robert Frank's lonely people, flags and automobiles and Bill Brandt's details about middle class people are symbols. Photographs of Dorothea Lange are symbols. Metaphors need talent and at the same time they change person to person. In the field of photography this matter was originated from Alfred Stieglitz whose photographs were famous between 1922-1937 when he clearly proved that emotions and images carry the same value; they are the equivalents. Ralph Eugene Meatyard, Wynn Bullock and Duane Michals were black and white photographers who used the shades for symbolic and mystic values. (Refo 30-31)

In the very beginning newspaper had used drawings, then photographs of real events were used. Starting from the 1960s photojournalism started to use symbols to give messages. As the time, culture and technology change, the use of the photographs have changed. In time, using some symbols has become popular to give messages to the audience. According to Kress & van Leeuwen (1996) Images are the central medium of information and the dominant visual language is controlled by global, cultural/technological empires. The focus of this paper is placed on newspaper and magazine photos about the protection or the survival of the environment. Here are the examples.



4. REPRESENTATIONS OF STILL IMAGE IN NEWSPAPER AND MAGAZINE PHOTOGRAPHS FROM THE POINT OF ENVIRONMENT'S SURVIVAL AND SUSTAINABILITY

PHOTO 1:



HURRIYET Sept.11,2006 Monday-Page:16

Medium: Color still photography

Literal Syntagms: Drawings Completed, Here is the Boğazkesen Mosque, view from the Bosphorus

Sign: A Photograph of the Bosphorus

Signifiers: An image of Rumeli Hisarı, An Image of Fatih Bridge, An Image of Marmara Sea

Signified: A perfectly harmonious view, maybe the 8th wonder of the world, pure beauty, pure beauty with contemporary civilization-bridge,ship,flag.

Comment: The photograph is related to the news. It can stand for the protection of the Bosphorus by directly revealing the beauty.

PHOTO 2:



HURRIYET Sept.11,2006 Monday-Page:20

Medium: Black & white still photography

Literal Syntagms: Şehitlik will be burnt

Sign: A Photograph of the sea with 2 ships and with a couple; at the distance there must be Gelibolu and Şehitlik. It is flu.

Signifiers: An image of a man and a woman on the ship embracing each other while watching the land. A larger ship transfers through the sea.

Signified: Metaphorically the couple imply a close relationship and they are watching the view.

Comment: The photograph cannot reflect the importance of the news. Şehitlik is about to burn, a value is about to be destroyed and the photograph shows a couple. It has no photographic value.



NEWS WITH NO PHOTOGRAPH: And there was important news that is about the nature but it has no photograph. A fire would have been caused by a cigarette and the forest will have burnt if the fire fighters had not been on time. There should have been an outstanding, attractive and emotional photograph so that people were much more careful about littering.

PHOTO 3:



HURRİYET Sept.11,2006 Monday- Akdeniz

Medium: Color still photography

Literal Syntagms: Kiwi abundance in Gazipaşa

Sign: A Photograph of a man reaching a kiwi tree.

Signifiers: The man is smiling because of the kiwi abundance.

Comment: With the help of the news the photograph serves for the meaning of the news.

PHOTO 4:



HURRİYET Sept.11,2006 Monday- Akdeniz

Medium: Color still photography

Literal Syntagms: The First step to life

Sign: A Photograph of a new born caretta caretta

Signifiers: A smiling child holding up a new born caretta caretta in his hand. It represents freshness.

Comment: With the help of the news the photograph serves for the meaning of the news.

Especially children readers are targetted. To get them involved a little boy is photographed.



PHOTO 5:



SABAH Sept.12,2006 Tuesday

Medium: Color still photography

Literal Syntagms: No beach left in Spain

Sign: A Photograph of two little children playing on a very extremely dry land

Signifiers: There are two eastern children are playing smiling on a draft land. The land is almost white and nothing is outstanding.

Comment: If we continue destroying the nature, waste the natural values, the world soon becomes somewhere shown in the photo. Children have to play on it. The position of their children is under danger. These children have no parks, forests and beaches, but their children, the next generation will not even have the chance to see green on the land and blue on the sky.

PHOTO 6:



SABAH Sept.12,2006 Tuesday

Medium: Color still photography

Literal Syntagms: Projects of multiplex houses now is being moved to the Islands.

Signs: One KUŞBAKİŞİ photo of the island and one photo on the profile.

Signifiers: There are buildings but also there is green land on the island.



PHOTO 7:



SABAH - Akdeniz Sept.12,2006 Tuesday

Medium: Color still photography

Literal Syntagms: Hard exam for the florist

Signs: A photo of a smiling girl in the middle of a flower garden.

Signifiers: The flower garden looks like a natural beauty and the girl spontaneously is put. It denotes nothing. There is no relation between the photo and the news. The photo is randomly put.

PHOTO 8:



POSTA - Sept.13,2006 Wednesday

Medium: Black and white still photography

Literal Syntagms: Saved the forest

Signs: A photo of a pilot being entered the ambulance

Signifiers: Neither news nor photo is related. Only the header is concerned. The pilot did well. He acted throughly and saved the whole forest.



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PHOTO 9:



CUMHURİYET - Sept.14,2006 Thursday

Medium: Black and white still photography

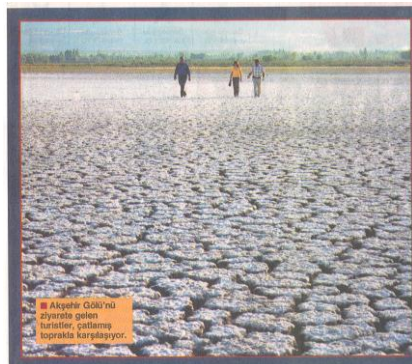
Literal Syntagms: Those defending Karadeniz's pride

Signs: A photo of a narrow seashore surrounded with sea and motorway

Signifiers: The construction of the motorway diminishes and destroys the natural seaside.

Comment: It denotes the loss of the seashore.

PHOTO 10:



STAR - Sept.15,2006 Friday

Medium: Color still photography

Literal Syntagms: Salt Desert

Signs: A photo of the cracked, chapped, split view of the Lake Salt. 3 people are walking on it.

Signifiers: Is a person able to walk on the lake, on water? 3 people are able to walk. The lake turned into a desert. Now there is nothing called Lake Salt. Instead there is a desert. In addition NASA declares a glacier as big as Türkiye thawed.

Comment: It denotes the loss of the world-wide historical lake. A natural beauty was lost.



PHOTO 11:



ZAMAN - Sept.16,2006 Saturday

Medium: Color still photography

Literal Syntagms: Legend Mount is being cleared away from littering

Signs: A photo of several colorful tents and people clearing the rubbish.

Signifiers: A lot of rubbish is shown. People –by institutions or by individually- polluted the soil. The natural and historical place is now a rubbish heap. But after littering, people started to clean it.

Comment: It denotes the counscieness of the people and socity as well as the dirty scanary of Nemrut.

PHOTO 12:



MİLLİYET- Sept.17, 2006 Sunday

Medium: Color still photography

Literal Syntagms: Underground smuggling city

Signs: A photo of a non-complete building

Signifiers: A view of a city but the building which looks like very huge does not have a licence. In this respect the over all design of the city will be destroyed.



PHOTO 13:



MİLLİYET- Sept.17, 2006 Sunday

Medium: Color still photography

Literal Syntagms: King's law in debate

Signs: A photo of half Bosphorus and half the natural places with houses

Signifiers: The photo denotes that if the law passed, the green left land will be destroyed.

4.1. Research Findings and on Methodology

In this research the techniques from semiotics is used to analyze that to what extent the photographs of the newspapers concerning the sustainability of the nature do reflect the consciousness and awareness about the vital protection of the environment which is a real cultural heritage. From this point for each day of the week one particular newspaper is chosen and the photographs reflecting the nature are chosen to be analyzed.

- * Hurriyet has 4 photographs on Monday, Sept.11.
- * Sabah has 3 photographs on Tuesday, Sept.12.
- * Posta has only 1 photograph on Wednesday, Sept.13.
- * Cumhuriyet has only 1 photograph on Thursday, Sept.14.
- * Star has only 1 photograph on Friday, Sept.15.
- * Zaman has only 1 photograph on Saturday, Sept.16.
- * Milliyet has 2 photographs on Sunday, Sept.17.

In this respect even though both the number of the photographs are rather less and cannot make an awareness about the protection of the environment whole, the photographs function as being relatively demanding. They show that the nature is in danger, we are losing our natural values and if we did not have some urgent necessary precautions, we would not have the natural beauties, the environment that we used to have in the near future.

If some of the photographs had been colorful, they would have been much more effective. Another considerable factor is that the number of the photographs that are published are less. Almost all newspapers gave place to the protection of the environment.



5. CONCLUSION

Once the digital technologies develop, the reality and illusion are realized as the mixture. Photography as a visual mass communication vehicle, has had its own power. In addition to its use as an artistic expression, scientific and technical applications, its one of the main purposes is to explain person to person, people to people, society to people; to focus on the contemporary problems of a society and to get an awareness among the society on these issues. As opposed to the common prejudice technological developments serves for the realization of the social issues of photography. In a humanist and honest way in the 21st century in which the ideologies are being minimized and utopias are almost being lost photography will serve like documentary, it will record the reality and it will get solutions to issues, at least it accelerates the solution stages. (Stontag 1993: 34 and Oral 2005:102)

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ENVIRONMENTAL EDUCATION VIA TELEVISION

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We can describe an environmental sensible individual as: Someone who has knowledge about ecological principals and relations, who is aware of the environmental problems and events, who knows the social, political and economical meanings of environmental problems, who has knowledge about the probable solutions of the problems, who can organize his close vicinity in order to solve these problems.

However, in the study that was made among the women who are at least 15 years old without having any official education, not working anywhere apart from their house works, living in central Eskişehir, district of Çamlıca ; we faced with a target social body that aware of the environmental problems and events partially, with a very low knowledge ratio of ecological principals and relations, never thought about the economical, political and social environmental problems. The women who live in Çamlıca District are apart from finding solutions because of not describing their problems. This situation constitutes not attempting to organize the environment of them.

Therefore, education is an inevitable necessity for this target society to create an environmental sensible individuals. It is taught that the television is a good educational tool in an environmental education to a target society that have fairly high ratio of television watching habits contrary to reading habits. So, what can be the properties of an environmental education program?

In brief, it is being thought that a program sequence can reach the target society from simple to complex, from general life to private and can create some differences with the duration that will not end without allowing to spread of the interest of the target society, presented by a specialist voice with a trustable look, with a pure language that the target society can understand, with a fiction that can be seen and understood by all the audience.

Introduction

Indeed Serres, pointed out that the world which was seen as an “enemy” and had to be defeated the world is a victim today in his work “Treaty with the Nature”, he shows how to develop what on the hope for the future: We have to decide the peace among us to deny the world and to decide on the peace with the world to deny ourselves.¹ In fact the world is not a limitless means presented to the people to be used in the way to one’s heart desires, man will be distinct with the distinction of the world. However, it was necessary for the people to wait till the second half of the 20th century to realize this fact and to feel that something was going wrong. In the 1960’s people were both aware of the pollution and the main cause was themselves. In brief, the environment in all which the creatures and man live and the environment it which they conduct on all their daily activities to live is getting more and more unlivable.

¹ Seres M. “Treaty with the Nature”, Translated by Turhan Ilgaz. – İstanbul : Yapı Kredi Publications, 1992.



The first meeting about protection of the environment was organized thanks to the effectiveness of an idea that something had to be done. All people were invited to exert effort to protect their environment and to develop it for all humanity and for future generations by the declaration issued after the first conference “People and Environment” which was held by United Nations in Stockholm in 1972.

The International Environment Education Program, in addition to the United Nations Environment Program that was prepared on the basis of 1975 Stockholm declaration, started at this point. It is possible to define environment education as the identification and the knowledge of the behaviors, the concepts and the related values of the humans’ biophysical and social environment. In other words, environment education is a concept that cares about the environment, has knowledge, value, skill and experiment about the environment, and also has the determination of behaving individually and collectively to solve the environmental problems present and in the future, bringing up individuals that can fulfill their own needs without compromising those of future generations.²

By these definitions, we can describe an environmental sensible individual as; having knowledge about ecological principals and relations, is aware of the environmental problems and events, knows the social, political and economical meanings of environmental problems, has knowledge about the probable solutions of the problems, can organize his close vicinity in order to solve these problems.

The aim of this study is to improve on suggestion about the properties of a television program, which can be used in environmental education in order to raise awareness in individuals about the environment.

Aim

To determine the necessary properties of an educational television program intended for a targeted audience that has the significant properties, and to state awareness for the targeted audience about the environment. In order to find out the answers, the following questions were put to the test.

From the point of television;

- 1- What are the watching habits and ownership of the targeted audience?
- 2- What kind of programs are mostly watched?
- 3- Is the audience interested in environmental programmes?

From the point of knowledge about the environment;

- 1- What are causes of air pollution?
- 2- What is global warming?
- 3- What is soil pollution?
- 4- What is noise pollution?
5. What is air pollution?
- 6- What is understood by the term of “recycling of solid waste”?

² Unesco (1997) A series of 29 booklets documenting workshops held at the Fifth International Conference on Adult Education- 6a Adult environmental Education <http://www.unesco.org/education/uie/confintea/pdf/6a.pdf>



Limitations

This particular TV programme deals with 15 year-old plus women in Çamlıca district in Central Eskişehir whose only responsibility involves the house work and who had never had the chance of a formal education. The communication is only transmitted via the television program, which has no particular aim of educating people about the environment issues.

Method

This study contains the evaluation of habits of the use of television and basic knowledge about the environment in a particular situation. Total field under survey and exemplification: Housewives that live and do not work in Çamlıca District in Central Eskişehir constitute the total field under survey.

This method has been applied for the selection of the sampling for the area study: General information about the district residents was requested from the Headman and from the District Houses Responsible. Accordingly; “The district was largely established by the Sumerbank Cotton Print Factory workers around the second half of 1960’s. The arrivals from the neighborhood cities, towns or villages established it. The district had another wave of immigration in 1980’s. The origin was again from the towns and the villages of Eskişehir. However, this time the aim was the education of the children and the willingness of living in a city. Another wave of immigration was seen in the years 2000’s. It has to be reminded that the immigration from the east and southeast Anatolia had been continuing intensely at the time of this research. Furthermore, the number of streets was around 350.

Due to the above mentioned information, it was decided that 18 streets were chosen as a sample, accepting that the 5% of the sampling could represent the total field under survey which the 15 year plus population of women evaluated as total field in the Çamlıca District. In determining these streets, the district was divided into three different residence units and 6 of each unit was thought to be taken as samplings. So, the domination of the different demographic characteristics of the streets was prevented to be sure of reflecting the results belong to the whole district. Causal sampling technique was used in determining the streets belonging to the each division’s cross section. The streets were tried to be chosen by observing the geographic distribution of the streets that were seen on map received from the Headman. The streets, which the survey would be applied to were on the first residential site of the district: Baysallar, Yılmazsoylu, Özdemirler, İlke, Coşkunay and Tepebaşı streets. The streets of 80’s residents and where the survey would be applied, were Çobanlar, Figen, Uzunlar, Sümerler, Topçam and Yeşiloba. The Eastern immigrants’ streets that the survey would be applied to were: Ayseli, Yeniköy, Batman, Yelkenli, Şehit Adnan Yüksel and Derepinar.



Data and Collecting

In order for the aims of the research to be realized the following data was collected: Information about the television ownership of the targeted audience and watching habits, what kind of programs they watched mostly, their concerns about the environmental programs, the reason of air pollution, what is meant by global warming, the reasons of the soil pollution, the definitions of noise pollution and of recycling of the solid waste and whether they wanted to participate in this kind of a program, were all considered. A survey was developed while collecting the data. The survey consisted of 31 questions one of which was about observation and 30 of them were elective.

The survey questions dealing with the television were the produced by the help of producer directors who would prepare the programs. The questions about the environment were prepared according to the views of the teachers Anadolu University, Environmental Engineering Department. The duplicated number of the survey was 100.

Delivering the survey forms took place On September 12/ 2006. Because some of the participants were declared that they illiterate, they did not read and understand fully, 52 of them were interviewed and the rest 48 surveys were collected in the same day. The end date of area the work was October 20, 2006.

Solution of the Data

Each of the surveys examined and were coded one by one. The evaluated survey number was 48, and the filled in surveys of the interviews were 52. Finally, 100 surveys were evaluated. The inventory of these surveys was made by hand. From the point point view of the research, it was found adequate to express the findings as numbers and percentages and no other statistical process was done. However, relations were established among different variables when it was seen necessary.

Findings and Comment

In this section, findings that were acquired by examining the surveys, formed the aims of the research, were stated.

Properties of test subject group

This is a group generally living in crowded families with low education level, where more than half of them coming from the neighbour villages, towns and cities and settling in the district and with a low-income level.



Their interests in television, books, newspapers and magazines

In brief, their interest in television can be commented on this way: Approximately all of them have televisions. More than half of the women watch television for a period of time 4 hours spread over all day in different hours. The news, television serials and films rank first in their choices. Almost all of them pointed out that would watch television films about the environment.

When we come to the point of reading newspapers, books and magazines, almost half of them said that they never read newspapers, books or magazines. Twenty percent of the readers pointed out that they read religious books and the Koran. Therefore the ratio of book readers is only 25-30 % when it is compared with the point of aims. Thirty-seven percent of newspaper readers are contented with just looking at the first page of a newspaper. Shortly, more than the half of the test subject group watches television after their house works and their reading ratio of newspaper; book or magazine is very low.

Their knowledge about the environmental pollution

The ratio of who answered the questions rightly about air, noise and water pollution is high. The correct knowledge about soil pollution is slightly above half. The knowledge ratio about global warming is about half. Again, the 40 % of the test subject group thought that recycling of solid waste was impossible. Thirty percent of the group thought that recycling of the solid waste was unimportant or time consuming. A high ratio of solid waste is given to the employees without doing the decomposition. Eventually 80% of those who admit to be willing to the decomposition and give the solid waste to the garbage men.

The Result of the Research

According to the research among the women who are at least 15 years old plus without having any official education, not working anywhere apart from their house works, living in central Eskişehir, district of Çamlıca ; we are faced with a target social body that wastes most of its time with house works and watching television; with have low income and low educational level; perceives only its local street when asked about the environment; believes that the environmental pollution can only be prevented by getting its street asphalted, getting its environment planted or with the penalties to be imposed on its neighbours for not taking their garbage out on time. They believe that the solution is in the hands of authorized people to continue their daily life without having any anxiety.



Educational TV

The television as a device

Television is generally perceived as a technical or physical instrument, which transfers the message by means of signals. However, in this study, it is discussed as a tool, which produces communication products and uses cultural and aesthetic conventions to create a “text”.³

It is possible to arrange the features of the television in this aspect. Television is an electronical device that the people perceive the image as living pictures physiologically. This characteristic makes it a familiar device that can be reached easily and the special moments that can be shared with the audience. For example, it does not need a special medium to watch a film; it presents a medium that can be watched alone or <with others. A device can offer moving images. Because of being a visual-aural device it effects more than the ones that can create music, audio effects, solely with the pictures solely. Television is a device of 3X4 of dimension. The relation between the height and width always requires television graphics in a horizontal format of 3X4 ratio. When its electronically structure and small screen is evaluated, detailed arrangements will not leave traces on the audience. Therefore, it is essential to say that it is not a detail device.

Educational TV

After classifying some of the properties of the television as a device, here are the facilities it provides to education: Since most people have watched television, the medium is familiar. Motion and visuals can be combined in a single format so that complex or abstract concepts can be illustrated through visual simulation.

When we come to the limitations: Broadcast quality television is expensive to create. Video production is time consuming and can be technically demanding, often requiring relatively sophisticated production facilities and equipment. Sites chosen to interactively participate in a television program may require specialized equipment, facilities, and staffing.⁴

In general, in educational duration and in private in television education what to be taught is very important besides the arrangement of the content. Planning rules, which have to be taken into consideration, can be summarized like below: There are benefits to project the content from simple to complex. People are not forced much in an education from simple to complex as most of the teaching theorists agree on this rule. There are advantages of passing from a concrete life to an abstract one but can be illustrated in mind life to provide individuals with easy learning. This can be identified from the concrete to the abstract. Probably as a natural trend before the perception, people headed for the close environment were seen. This constituted an approach from close to far in content organizing.

Seeing the whole and talking about the details later is also a method that eases learning. In this technique, which has come to be known as “comment theory”, the whole is shown first and focused to the certain part of a whole.

³ Fiske H (1996) Introduction to Communicative Studies, Süleyman İrvan (Translator), Bilim Sanat Publications/Ark, Ankara

⁴ Willis B (2002) Instructional Television, <http://www.uidaho.edu/eo/dist5.html>



The human mind perceives similar first according to research. To perceive the different needs a certain effort. In content organizing this brought a technique from similar to different.⁵

It is very important to determine the structure when preparing an educational television program. The same content can be reflected to the target society as educational or open edged, effective or passive, structured or non-structured, combined or independent, controversial or impartial by means of the view of the programmer.⁶

Conclusion

We defined an environmental aware individual as: Someone who has knowledge about the ecological principles and relations, who cares about the environmental problems and events, who knows the meanings of the social, political and economic environmental problems, who can organize his close environment to solve these problems.

However, we faced a target society that were only aware of the environmental problems and events partially, the lowest ratio of the people who have very little knowledge about ecological principals and relations and who have never thought about the social, political and economic ways of the environmental problems in a research that was made upon of at least 15 year one plus women in central Eskişehir, Çamlıca district without working in any job, just dealing with the house work, without having any official education. Because the women who live in Çamlıca district are not aware of the problems; they are far away from finding the solutions. This is the main reason of why they cannot organize their neighborhood.

Therefore, education is an inevitable necessity to carry the targeted society to the position of environmentally aware individuals. It is taught that television is a good educational tool in an environmental education to a targeted group that has fairly high ratio of television watching habits contrary to reading habits. So, what can be the properties of an environmental education program?

The benefits of the answer of the question are traced to two different ways. One is the content the other is the structural specialty of the program.

Content

It is being planned to evaluate the planning program to be prepared as a course in three headlines. Accordingly, the first section will be formed by the programs that narrate the environmental problems, as they are to create the differentiation and supply the confrontation of the target society with the realities. The second section will have the more educational sequence of acquainting features. The discussion programs to prevent the environmental pollution will be featured the third one.

⁵ Şimşek A (2000) Educational Communication, Anadolu University Publications, Eskişehir

⁶Chandler D (2001) Educational Televizyon Programme Structure and Style, Notes on research by Tony Bates.
<http://www.aber.ac.uk/media/Funtions/msc.html>



Structural Features

The allocated time is projected to be 5 minutes for the first section, 10 minutes for the second and 5 minutes for the third one.

Visual arrangement

For the first section, it is thought to create the differentiation with using the unreal images with medium sounds. This is seen to improve the effect. Especially, in the second section which the specialist states, a shooting scale called “close-up” is being planned. A content arrangement from simple to complex will be made at the complex sections of the topic and three dimension animations will be used when necessary. In the fiction stage the necessary time will be given to the targeted society to understand the visual material and will be abstained from quick rhythmic fiction.

Aural arrangement

This duration contains the aural units of the television program. The most important ones is the human voice. It is thought that a specialist voice with animage is more effective by means of motivation of the targeted society. Moreover, using a non-official, sincere narration language, leaving unnecessary words in the text in order to provide an effective use of the narrator’s voice, using long sentences that the narrator can read slowly are being thought.

Plans are being forwarded to use the music and effects when needed to create a certain spiritual situation and to show the negativeness of the image on the targeted group. It is accepted that the music and sound effects raises the realistic sense and makes target society’s attention denser. So learning becomes easier. It is assumed that the use of natural medium sounds will be effective on the targeted audience.

In brief, it is being thought that a program sequence can reach the targeted group from simple to complex, from general life to a private one and can create some differences with the duration that will not end without allowing to spread the interest of the targeted society, presented by a specialist voice with a trustable look, with a pure language that the targeted society can understand, with a fiction that can be seen and understood by all the audience.

(A 5-minute program presentation that has the narrated features named “ARE YOU AWARE?”)



THE REFLECTION OF CULTURAL HERITAGE INTO THE CHARMING ENVIRONMENT OF MEDIA VIA ADVERTISEMENT FILMS

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In this prepared declaration, cultural and historical environment are going to be examined from the view point of being used as natural films scenes in advertisements, forming discourse and creating character. Furthermore, the concept of contemporary nostalgia is going to be dealt with.

The field of advertisement films also uses culture transfer consciously. According to Emre Kongar, technologically developed societies, depending on their materialistic culture superiority, transfer dominantly their opinions about world, consumptions habits and the way of living to the underdeveloped societies. Also, the process of communication in globalization world uses a complex process, which includes in whole efforts of transferring the message, symbolic codes, languages, cultural codes that organize the communication relationships and verbal and nonverbal communication events which are used in order to transfer into messages. Hence, active and powerful side uses communication process in order to impose its attitudes and behaviors and to affect and change the other side. Also cultural heritage takes its place in this process.

Popular culture field, being evaluated by A. Gramsci as “Interaction Field”, is being formed by many tendencies. Here, environment is seen as an important factor. Cultural heritage carries mythology, legends and tales to nowadays by being moved them. At the same time, this movement reflects in the advertisement films and transforms into characters.

The charming environment of advertisement films is one of the fields that soften the shocks of communities because of melting traditional cultural values in modern life. The advertised trademarks, products and objects overlap with this charm. Moreover, cultural heritage increases the art power of this charm.

In preparation of the declaration, apart from the concepts of modern sociology, psychology, ecology and advertisement analysis; the analysis of advertisement films is going to be provided by basing on the myths, geography and culture of the Ancient Anatolia and Mediterranean and of East and Far East.



The Reflection of Cultural Heritage into the Charming Environment of Media via Advertisement Films

POPULAR CULTURE

The traditions, the cultural accumulation, and the historical consciousness that have been created by humanity throughout centuries have undergone drastic changes in a respectively short period of time, that is since the 60's. The intense effects of these unpreventable and unstoppable changes on the social, economic, and political spheres have been leading to disaggregations and differentiations in traditional cultures. In traditional societies, culture is integrated with all spheres of human action. However in modern society, production and consumption have diverged from each other totally. Technological development, industrialization, industrial society, and lastly, informatics have been the stages, which have been gone through. The fact that mass production, mass consumption, and mass communication are the major components to canalize life and the existence of mass society have caused changes in culture's material production vehicles. The life style which the society was used to has been reversed and transformed by these formations.

According to communication scientist Oskay, "the modern period with its spreading meta-fetishism is transforming our lives into shocks, and is destroying our traditional life styles. In the modernization process, which is devastating traditional life styles, new forms of life styles are developed in order to soften the malarious effects of that particular process (Oskay, 1981 p.12). Although the world is converted into a universal village by the television, the major communication vehicle in the modernization process, it is nothing else but the television -as the most active and only vehicle of shocks, transformations, and canalizations- that is shaping our lives.

Industrialization has led to urbanization. Factors such as economic crises, the rise of products, population, and the number of unemployees, problems routed in the political system have accelerated the mass transformation process.

Whereas Europe has undergone these changes after the 17th century, it is only today, the 20th century, in which the particular process is faced in Turkey. What is experienced is a period in which a new, unique culture, which moves differently from the traditional, circular, and repetative life style of the folk culture, presses itself into the foreground. The mentioned culture which occurs as a result of rapid urbanization is called popular culture.

According to Oskay, while the traditional life is devastated, man's relationships are objectivated by the personal production of goods. Additionally, images and objects are also objectivated and differentiated into objects of our perceptions. They have been transformed into materialized shapes of our fantasies. Moreover, our life experiences have undergone changes on the level of perception and fantasy (Oskay, 1981 p.4). In underdeveloped areas of cities, people have been requesting pleasures to forget their daily pains and entertainment to escape their fatigue. In this sense, entertainment created by technology exists as a response to a necessity.



According to communication scientist Oskay, the gradual absorption of popular culture by mass culture and the spread of mass media, especially the television and the VCR, and their taking over the rural areas lead to developments that coincide, along with many others, political results.

Owing to the easiness to reproduce its cultural products, mass culture enters the market and systemizes itself without acknowledging any time or space limit. At the same time it homogenizes local differences and sensitivities by absorbing qualities of all former popular cultures (Ahiska, 1989 p.9). To dominate the culture industry and the mass media means to structuralize movies, radios, magazines, and TV channels within the same system. Even the ones which differ politically submit to the same forms as in the case of advertisement films and music. Cities have lost their souls. The contradictions observed between the classes of a mass society, in which localness and liberties are lost, are tended to be underestimated and are approved by wide ranges of the society as a life style (Oskay, 1982 p.10). Nowadays, considering technology's effective and channelizing quality, it has turned into an impossibility for an ordinary citizen to perceive life through his/her own senses and thoughts. This is mainly due to complex communication forms and messages spreading from numberless communication channels. Life, as it is presented by the messages, which are formulated by the mass media, consists of shocks. These fictional shocks are made to be perceived as real life. A human being living in a society and in a world shaped by incessant shocks is able to evaluate neither his/her own life nor the society he/her lives in, in its wholeness. To prevent the shocks to be perceived as original and as real life experiences, the human consciousness has constantly to be skeptical and sharp.

The Turkish society has been introduced to TV broadcastings in the years when Turkey underwent important changes in its socio-political and economic structure. Our country has given start to the industrialization process within the planned span of time. With the tractor's overtaking the place of human power, the agricultural sector has been experiencing a crisis. The continuing migration from the rural side into the major cities has effected Turkey's demographical structure dramatically. Having migrated into cities, the masses have been dragged into a new social structure and cultural environment. Very few of the emigrants have been able to find an occupation in the industrial sector. These people in search for possibilities to live have been introduced to the television in that particular period. Having not the time to get assimilated into the city values, the rural citizen's introduction to such a powerful mass media as the television constitutes the important start point of the Turkish society's cultural transformation. In recent years, the immense pressure of mass media on culture has been a popular discussion topic in Turkey.

Previously, popular culture used to be the resistance culture of the individuals opposing dominance. However nowadays, popular culture has lost almost all of its opposing quality. Popular culture's opposing aspect has disappeared in mass culture and mass media. It has become the culture of daily life and is now forming a whole with entertainment.



The response to the emigrants in search for identity came from the television and entertainment sector. Different from the kind of entertainment that is created actively, shared and requires participation, it has turned into an activity performed to a passive audience.

A. Gramsci developed a new approach to popular culture under the light of the composition of structuralist and culturalist view points. Popular culture is evaluated by Gramsci as an “interaction field” that is shaped by tendencies belonging to high and low culture (qtd. by Maktav p. 37-38). This field is the interaction area, in which the opposite elements of the two cultural levels are intermingled. Popular culture can be defined as the organization of beliefs, practices, and the norms (objects) they coincide, which can be shared by a wide range of population. These beliefs, practices, and objects, which take their roots from local traditions, not only comprise the popular field, but also popularized elite cultural forms, that is, beliefs, practices, and objects rising from high culture. To exemplify: the use of Mona Lisa in advertisement films or the use of classical music pieces as background music or soundtracks. Another striking example are the advertisement films of the washmachines produced by the Italian trademark Ariston, broadcasted on Turkey’s national television channels. The striking point in the mentioned movies is followings: The wall and ceiling frescoes expressing the intellectual and cultural power of the Renaissance are hanged up on their former places after they have been washed in the before mentioned trademark’s washmachine as if they were an ordinary washable object. Among the washed frescoes there is also the ceiling of the Sixteen Church in Vatican, which depicts God’s hand reaching to man. Similarly, Botticelli’s work titled “Venus” has been a source of inspiration for the trademark called Shell. And Carmina Burana has been used as background music in advertisement films and TV programs (Ateş Hattı-Fire Line). As it is obvious, popular culture does not express a pure, unadulterated culture consisting of folk culture solely, but it is a formation that aims at spreading high culture products among the common citizen by popularizing them.

Craig McGregor argues that “any society’s dominant culture at any given time is the popular culture of that particular society. Actually” he says “there is no way to think of popular culture separate from the high culture of any society.”

Jamesson, too, has a positive approach to popular culture. According to him, “mass culture is realer than high culture, because it is popular culture.” McGregor, who defines culture as action adds that “the pictures in their gilded frames hanging on the walls of a museum are not culture.” Which means that the aluminium framed pictures kept under lock and key in our homes, and the row upon row of books in the libraries are not at all (McGregor, 1990 p. 86-126, p. 19-20).

Actually popular culture is a new culture, which occurs during the process when a class struggles to preserve its own culture (folk culture) against the dominant. The rural citizen, who has newly migrated into the city, does not leave his/her old way of living, habits, and traditions aside and therefore cannot assimilate into the city culture he/she has been articulated into. The culture created by these people, which carries traces of both sides, can be called popular culture. Besides, Turkey is struggling to shape its own popular culture under the cultural bombardment caused by globalization.



Turkey's response to McDonald's, that is, fast food culture, in the shape of fast food 'döner' and 'lahmacun' is a very appropriate example. That the folk songs are covered with rock'n'roll sounds, the imitations of foreign TV programs and magazines and even the desire to imitate the USA in TV serials are constituting accurate illustrations to popular culture as a life style.

Mustafa Arslan examines in his doctorate thesis titled "A Sociological Research on Turkish Popular Piety" the fact of popular religion basing his opinions on the studies and interpretations of Mensching, de Oliveira, Waardenburg, and Weber.

According to his thesis, Turkish popular piety is not be studied within a frame of a linear and static understanding of history and society, but within a dialectical frame of continuity and alteration that coinsides particular elements from the past and that at the same time provides particular historical and social influences. Accordingly, the modernization and secularity policies existing in the Republic period and the passing into a nation state through improving these policies are to be considered as a process affecting Turkish popular piety. Related to urbanization, and progress in industrialization, Turkey had to face mass migrations from the rural to the urban areas in the 50's and the 60's.

After the 1950's, Turkey underwent not only a political, but also a socio-economic process of alteration. As the result of industrialization, the skip from agriculture to mechanization, and the spread of communication, urbanization rate had risen. With this urbanization process, there occurred an immense migration from the rural to the urban. The emigrants brought with themselves their own culture. That the migration had been sudden and dense was a hindrance for the city to melt its new guests in its pot. This has been the starting point of what Mardin talks about as "the big culture being gnawed by the small one".

This situation shows that Turkey has been facing certain difficulties resulting from the transition from a community to a society. In societies having undergone a transition period as Turkey, to cope with the problems arising from the modernization process have been expressed abundantly. That the person having migrated into the city is in doubt concerning his/her future, drives him/her to search for a place where he/she can escape his/her fears and anxieties. If the city does not have the required mechanism to meet such needs, the emigrant will seek directly or indirectly some secondary mechanisms. These secondary means to respond to his/her needs will be nothing else, but to join a community. There is no doubt that various means such as "citizenship" may play a role in joining a community, but the most effective one is surely religion.

According to Mardin, the problems faced on the folk level are tended to be solved through a tight devotion to what is thought by the lower class as Islamic. Therefore, the emigrants will tend to join certain communities, tariqas or other traditional religious formations, which give messages parallel to their own popular religious beliefs, and they will look for places, where they can carry out their popular religious beliefs and practices.



Yet, there is another aspect of modernization in cities. That is, that the people can find the opportunity to have access to new education chances and the opportunity to improve their culture (newspaper, media, etc.) despite all the before mentioned negativities.

Mass meetings, conferences given in huge salons, TV programs, VCR'S, CD'S, written texts, religious promotion products have come to the state of means that have taken the place of the face to face relationships of the traditional dervish lodge and the medrasa. Parallel to the increase of religious publications, there can be observed an increase in the number of the educated mass consuming those publications.

That the high-book based understanding of religion, which developed under the influence of the reform acts in Turkey, crashes into both the rural understanding of Islam and the tendency in the major cities to approach religion traditionally, is fact. The efforts of the universities, the political approaches of the cities, and the recently arousing religious reform acts to re-establish Islam in its original form will surely eliminate beliefs and practices -including religious and magical practices classified as vices and degenerations- belonging to popular culture.

According to Waardenburg, what increases the continuous tension between the book based and the popular understandings of Islam are the reform acts observed since 200 years (Waardenburg, p.367). To attempt to solve certain problems concerning the Islamic way of life and its practices without studying the possibility of changes and transformations in popular culture and without trying to consider popular culture as a section in itself, would be incomplete and false. Even under the influence of modernization seen as the "gate opening to consciousness", there will remain indispensable traces of popular culture.

THE RELATIONSHIP OF ADVERTISEMENT FILMS WITH ART AND CREATIVITY

Advertisement films have been making use of the movements, styles, and techniques, which have been created throughout history in all fields of art such as painting, music, photography, cinema, and literature. To illustrate, they have been making use of the narrative, interpretation, and fiction styles being observed in movements such as naturalism, materialism, romanticism, absurdism, expressionism, or surrealism. Besides, it can be also observed that the literary style called stream-of-consciousness is from time to time adapted to advertisement films.

Löwenthal, a popular culture critic, argues in favour of art against popular culture. Accordingly, nowadays, art products have been replaced by phenomena belonging to popular culture. Popular culture is nothing else than a distorted copy of reality. The distinction between art and popular culture is the one between artificial satisfaction and real life. When someone passes from the field of art to popular culture, it means that he/she has passed from the 'aesthetic' field to the one of amusement. Such an evaluation is at the same time making a reference to the distinction between high and low culture.



As to the matter of creativity in advertisement films, there are two different approaches to the matter that are worth mentioning. The first one argues that creativity in advertisement films is the process of answering what is going to be said. The most important representative of this approach are David Ogilvy and Rosser Reeves. The second one emphasizes that creativity in advertisement films is a process of studying how it going to be said. The importane representatives of this approach are William Bernbach and Leo Burnett.

According to Rosser Reeves, creativity in advertisement films can be achieved by suggesting a unique sale experience that would distinct the product from its rivals and that would motivate the target customer to buy the product. This view of theirs, forms the foundation stone of their creative strategy that is called USP. David Ogilvy, who, like Reeves, emphasizes the point of what is going to be said in advertisement films, stresses the importance of strenghtening the trademark image by giving an identity to the product. Ogilvy, who states that creative contents created by giving an identity to the trade mark through stressing on the psychological benefits (prestige, power, esteem, suspense, youth, etc.) of a particular product are more effective than the ones which are created through stressing on the physical qualities of a particular trade mark, is at the same time the name father of the creative strategy called trademark image.

According to Bernbach, writing an advertisement text requires to be well-informed about advertising within a certain thought system and to know precisely what one wants. What is important in advertising is newness and originality. Bernbach considers the advertisement films, which are immediately noticed by the people and which are not wiped away within a short period of time, as effective and successful.

Whereas Leo Burnett argues that advertisement films are creative when they represent natural, simple, and unadorned striking aspect of the product, which have their roots in the product itself.

Al Ries and Jack Trout have been emphasizing the fact that creative works in advertisement films can only be achieved if the advertisement film is successful in finding an appropriate and pleasant place for the product, trademark, service, or institution in the consumer's mind and in leaving there an utmost effective mark afterwards. To ensure that the consumer, who comes across hundreds of different messages each day, notices the message of a particular trademark, is only possible by creating an emotional connection between the trademark and the consumer. This creative approach is called 'positioning' in the advertising sector.

Tom Dillan's understanding of creativity consists of several stages. The first stage is to define the major target mass, which the product or service is to be directed to. The second one is the stage in which the problems, which are faced by the target mass and which are to be solved, are defined. In this phase, the product or service has to be studied not from the technical point of view of the producer, but from the consumer's. And it has to be designated whether the product/service responses to the consumer's demands. In the following stage, a clear, creative message has to be developed that would be in coherence with the gathered information and the consumer's desicion, and that would leave an effective mark on the consumer's mind. In short, it has to got a message content that has to attract the attention of the target mass, to put the trademark into the area the target mass to, and to establish the connection between the trademark and the consumer.



A. H. Maslow has put forward the theory that all know as the 'Hierarchy of Necessities' (1940). Maslow had carried out the most true analysis of the consumer behaviour. He thought that people primarily would response to need to survive, then they would look up to new horizons and only then they would direct their attention to needs emerging from their social and relational needs. Maslow pointed out that they are likely to experience losses considering their desires such as to gain esteem in the society or to fullfill oneself spiritually.

Needs

to fullfill oneself

(To fullfill ones goals to

fullfill oneself)

Social needs

(Self-respect, gain esteem, status)

Social needs (Sense of belonging, love)

Safety needs(Security, protection)

Physiologic needs (Hunger, Thirst)

The most important aspect of Maslow's 'Hierarchy of Necessities' is human interest field. The marketing experts have thereby turned towards the necessity to fullfill themselves.

According to Pringle and Gordon, with the submission of trademark promises to the consumer in the last thousand years, trademarks aquire not only rational and functional qualities, but also emotional and psychological notions. Trademarks have to reach elit values in the frame of political qualities, ethical principles and even spirituality. The spiritual level is about the values it aquires in respect of the aids the trademark submits to the society and individuals.

The spiritual dimension for the customers: with the start of television advertisements and with the emmergence of scientists studying on behavioural psychology like John Watson, more emotional and psychologic qualities began to be used. This tendency emerged in the 1960's in England, and has been put into practice by the Bartle Bogle Hegarty advertising agency known as 'Emotional Sell Proposal', successfully. By including emotional and psychological qualities into the trademarks, it becomes possible to construct communications that give the image of a soul, style and user. These will be further discussed when we study the advertisements of Coca Cola and TurkCell (Hazır Kart).

In recent years, it can be observed a new dimension, an increase in man's demand for high values in concern with trademarks and life standard.

Being a persuasive communication form advertisements aims at informing the target mass about its communication goal and the product it promotes, at having an effect on attitudes and perceptions, lastly, at directing the target mass towards a positive buying attitude, that is, towards the direction chosen by the trademark.

Opinions, which accept that advertising aims not only at selling but also at communication, mention the effects of models consisting of a row of phases including the changes of the consumer's state of knowledge, which occure in the consumer's mind successively. On the level of the effects of communication it can be stated two major models: NAIDAS and DAGMAR.



The right ascension of NAIDAS is

- a) Necessity
- b) Attention
- c) Interest
- d) Desire
- e) Action
- f) Satisfaction

DAGMAR (Defining Advertising Goals for Measured Advertising Results)

- a) Awareness
- b) Comprehension
- c) Conviction
- d) Action

Along with advertising's aiming at communication and art, there exists another group of goals pointed out as special needs:

- a) to support the personal sale program
- b) to reach people that cannot be reached by artists
- c) to improve the relationships with the help of mediators
- d) to enter a new market or to attract a new consumer group
- e) to present a new, goods market
- f) to improve the sales of the industrial branch
- g) to resist prejudices
- h) to ensure the esteem of the business enterprise

The mentioned goals are shaped according to the structure of the market and the target mass, and according to the general touch of the planned advertorial campaign and the marketing communication strategies. Besides, during an advertisement workshop, it is possible to add new exceptional goals to the generally accepted ones (qt. in Elden, p.23).

THE USE OF POSITIONING STRATEGIES IN ADVERTISEMENT WORKSHOPS BEING PART OF MARKETING ELEMENTS

Due to today's variety of products and an environment filled with the message bombardment it has to be acted strategically and planned in the communication efforts. The publication of Jack Trout and Al Reis's essay titled 'The age of Positioning' in the magazine called the 'Advertising Age' (1972) informs us that the image era has come to its end and that we are now entering the era of positioning strategies.

Just as the opinion that 'the consumer is the only focus of the marketing efforts' is the expression of the change of mentality in the understanding of contemporary marketing, the opinion that has put its mark on today is that 'the focus of the effective advertising efforts is the mind of the consumer.'



The marketing expert Jack Trout, who is known for his studies on positioning and differentiation suggesting that 'an advertiser's job is to dramatize', stresses on the point that it is very hard to make people change their minds. He stated that "People resist to change their minds. Do not waste time by trying to change the consumer's mind. Act instead in corporation with their thoughts and beliefs. What's real is perception." And added that one should not confuse them with facts. Advertising is a means to reach wider ranges of masses. That is, advertising is a means of communication.

First, find the aspects in which you differ. Advertisements should dramatize the concept and re-shape it into something more exciting and interesting. Creativity is a means to dramatize your difference.

Consumer Analysis: nowadays, the consumer is of great importance. The centre of today's trademark battles is the consumer's consciousness. The consumers are making decisions to buy something in complex ways, which would confuse and would leave the authorities in suspicion, because they are surrounded by uncountable stimuli.

Besides, the consumer is also examined in respect of his buying attitude's demographic, socio-cultural, and psychographic aspects. Several possible definitions are made of multiple subjects such as the consumer's life style, his/her expectations, understanding of friendship, or relationship to his/her family.

The consumer positioning approach aims at positioning in the consumer's mind by uniting specific demands with the product.

ANALYSIS OF THE COCA-COLA CASE

Due to a problem emerging in Belgium – 1999, European news papers printed that "Coca-Cola, as the symbol of a youth-oriented, wide-minded, and comfortable life style, has been setting forth a totally insensitive and socially alien attitude." Due to these criticisms Coca-Cola had been losing customers steadily. The shares and the trademark had been falling into disfavour rapidly.

Douglas Daft was appointed to the president post and he showed immediately his authority. According to his opinion, Coca-Cola had turned into an over-centered, slow, insensitive company. Daft started his job with a serious self-criticism.

Having dismissed Coca-Cola Company's all high rank administrators in Europe, Daft established local administrations, within six months. According to his point of view, their success, that had lasted until a short period of time, had had its roots in their ability to address a global population. They would re-establish that success. After having considered local differences, they would address them, too. He was convinced that nothing additional was needed in order to keep in step with the 21st century.



The fundamental principle of Daft's new strategy, which he had based on three principles, had been the transfer of the high rank positions to local administrations. The important idea here is to be able to think and act locally by re-turning from globalism to localism. Draft managed this by giving the responsibility to the utmost close persons to billions of consumers. As Draft put it: "We do not sell to markets, but to societies.", it had become an urgent need to establish administrative groups consisting of model identities of the societies they entered. Coca-Cola would make progress, if each of the local administratives would do their job according to the working atmosphere of their own country and the culture of their own nation. Daft's dream about Coca-Cola was "to be the company posing the world's diversest institutional culture." It was time that Coca-Cola got into good terms with all governments of the world.

When scandals occur, there emerges an urgent need for an approach towards common people.

"Give importance to the fact that the company is not only serving the market, but also the society, get into good terms with local marketing authorities, governmental authorities, and journalists."

Coca-Cola's approach, which the company makes use of in every advertisement and all kinds of PR strategy, is exemplary in the sense of perceptive administration. In the days when the principle "Think globally, act locally!" worked at sensetional dimensions all over the world until the faults were paid painfully, Coca-Cola slipped into a totally opposite approach. As we have mentioned in the 1st fundamental pricipile, Coca-Cola's adaption of the company's most famous single to Turkey is a very fitting example. The Coca-Cola company prepared different remixes according to the different tastes and structures of Turkey's eleven regions and made the local radios play the particular single of each region. The one and the same single took in our northern regions the shape of a Black Sea composition, in Eastern Anatholia the shape of a 'bozlak', in South-Eastern Anatholia the shape of a 'uzun hava', in the Aegean the shape of the Efe epic, or in Ankara and its surroundings the shape of a 'misket havasi'.

Al Ries argues that the Coca-Cola company is heading towards the middle way trap. He points to the risk that the company's low-calory drinks may lead the costumers running after taste to confusion.

Duygu Alptekin is at the administrative post of the company's Middle European and Middle Eastern group's branch concerned with projects for privat consumption since January 1, 2005. Duygu Alptekin has been appointed as the manager of the Middle European, Eurasian, and Middle Eastern Group. One of the Turks working in the international system is Cem Kozlu. With 51 countries to manage, he is one of the most authorative characters of the group.

In reportage, which the magazine called Media Cat made with Duygu Alptekin, she stated that an enormous part of the Coca-Cola company reaching from Russia to Italy has been working under the leadership of Cem Kozlu. She added that Turkey was a dinamic market coinsiding numerous skilled workman. The primary country in those 51 countries is Turkey. The other important countries are Russia, Poland, Romania, Austria, and Greece.



Alptekin is at the same time studying on possibilities to increase private consumption. She aims at making Coca-Cola an indispensable part of our dinner tables. The goal is to develop a common strategy and then to reflect this to their marketing plan. She states that studies have to be made in accordance with the differences and the similarities between different local areas; for example what the Olympic Games mean to Greece is not the same as what they mean to Turkey. But she adds that there remain similarities such as humanly values like eating dinner with the whole family. The dinner table is for lots of people the only meeting place. Therefore are those times holly ones. There, you can find similarities. Of course, there are going to be differences, but the studies are going to be carried on considering those differences.

The Situation in Turkey: actually, when compared with other countries, Turkey's market is at a relative high level in respect of private consumption. With the application of the fasting month called Ramazan concept, there can be observed a serious rise in the consumption rate of Coke at dinner. In the case of Turkey, studies on what our habits are, how Ramazan is perceived have been made and the answers have been applied to the strategy to be followed. In this sense, there have been carried out serious communicative campaigns. The achieved success has been so big that the advertisement films have been broadcasted in Middle Asia, Caucasia, and the Middle East.

While she is going to develop strategies for marketing and private consumption, she will undertake the leadership role of 6 countries. She states that: "There will be established a marketing program for those 6 countries and it is going to be me who is going to lead this program. I think that Turkey is a market that is very suitable to develop thanks to its population, climate and young population. Coca-Cola is now leading in Turkey. As to the question of how Coca-Cola was effected by the entrance of Colaturka and other trademarks to markets: as the trademarks, which enter the market newly, are helping the market to grow. And as it is obvious, positive rivalry is an opportunity that proffers other alternatives to the consumer. Considering their contribution to the consumer, they are positive in the industrial sense.

Coca-Cola possesses certain principles. What is important for us is continuity, the establishment of an emotional connection, to organize integrated market activities, to realize all this within a frame of renewal, and to continue our lidership. Aslong as we preserve these principles, rivalry will have a positive effect on us."

Coca-Cola advertisements created a synthesis that can only be understood with experiences peculiar to Turkey. The key to this synthesis has been the union of the popular culture areas and the popular religion areas. For this, the religiously holly month Ramazan has been used. At the same time, an advertisement serial, which is about finding the original Coca-Cola bottle Nr.1, is still being broadcasted on the Turkish media. The characters who take place in the mentioned serial are sports stars and common young sports fans. With this serial, the company has created a sort of advertising archeology.

The advertisements that support these opinions are the advertisements of Coca Cola and Cola Turka that are filmed in Ramadan in Turkey. The unique historical and cultural environment of Turkey has been used as iner and outer locality. Moreover, the traditional fast supper is being evaluating in the environment of historical, cultural and the nature of these things lived.



The advertisements are fictioned by using cultural and natural environments that are chosen from different parts of Turkey and putting both emotional dimension and nostalgia in the first place. The localities are Ağrı, Kars, Hakkari, Gökçeada, Edirne, Adana and Ege cities. While specific and warm personal relations of these cities are putting in the first place; at the same time, not only the tradition of supper and unique natural environment but also historical and cultural heritage are being underlined with little details.

According to Pringle and Gordon; now, during the process of creating the promise of brand and its being transferred to customer; apart from being functional and reasonable of the qualities of brand, emotional and psychological concepts of brand have been understood. Increasingly, they have to obtain higher values in the context of political qualities, moral values and even spiritual features. A brand has to create emotional and psychological values, to be perceived and to give trust. On the other hand, the political dimension is related to the profit suggestion for recipient and dealer. The suitable comparisons that are going to display quality and buying legitimate have to be made. Lastly; the spiritual dimension, from the view point contribution to the society and to individuals, is related to the personal values that are in the nature of itself. With these values, how it gives excitement and enthusiasm to the people; and consequently how it creates faith and trust upto a degree are the matters of question.

The TurkCell (Hazirkart) Advertisement Campaign – Özgür Kız (Free Girl): TurkCell has been founded as a participant of the Çukurova Group in the year 1994. As of August 2002, TurkCell possessed 13.8 billions of subscribers.

The slogan of the Hazirkart advertisement campaign is ‘Free Girl’. In the advertisement films, this slogan is also stressed on visually. The Hazirkart advertisement film started with two youngsters, whom the masses didn’t know much. Everything began with an advertisement story and a soundtrack composed by Nil Karaibrahimgil being in coherence with that story. Having considered the reactions of the target mass, the company decided to start a second advertisement serial with Tarkan in the leading role. In the advertisement films, TurkCell’s heroes visit Turkey’s authentic places one after another.

The visual and audial stress on youth is dealing with continious journeys, expeditions, and the adventure-loving mind remembering us of the 60’s free youth. It is obvious that the dinamic and free youth has been chosen as the target mass.

The heroine of the advertisement campaign continuously goes out and wander far and near, always pursuing her curiosity. Whereas the hero manages to reach the places where the heroine had been only after she has gone or just as she is leaving. An emotionally intense atmosphere is experienced. And then comes the handy onto the foreground in order to have the possibility to communicate. Landscapes of Turkey’s most authentic and utmost visual places are seen on the screen. This has been a decision of Sinan Çetin, the director, in order to emphasize freedom. The warm atmosphere of Anatholia are being given through humanly relationships, dialogues, and colorful clothings. The Soundtrack is in coherence with the rythm and the emotionally thick atmosphere of the film.



Yet, the heroine has got a cowboy hat on her head. The general atmosphere of the advertisement film remember one the Marlboro advertisement. In Marlboro advertisements, cowboys wandering through vast American landscapes and scenes of the Wild West could be observed. It can be easily understood that in establishing the advertisement concept, including Landry's Marlboro music, they have had made use of the classical Western. The American hero always had been a handsome American man with free will. The male cowboy has been replaced by the 'Free Girl' intentionally as a contrast.

The advertisement serial's interactive quality lies in that the company had decided to include Tarkan as a star into the serial using the scenario that they had chosen among the scenarios being sent by the spectators. The outcome had been the Anatholian version of the American Cowboy. The final of the serial's scenario had also been designated by the interactive communication with the subscribers.

The scenario and the panorama chosen by Sinan Çetin remind of a Wim Wenders interpretation. Such an advertisement can be defined as a kind of modified use of projective advertising. In these kinds of advertisements commercial approaches are connected with fictions taken from social life. The psychologic dimension is also an aspect that is taken serious. These advertisement films have begun to be broadcasted on the media since November 2002.

Along with two young characters, who are the representatives of the company's target mass, the pop star Tarkan have taken place in the advertisements of Hazırkart. That the youth has identified itself with the two actors and with Tarkan during the whole advertisement serial is prove enough to say that the advertisement has reached its goal.

Survivor

The indirect advertisement film that fictioned with the slogan of "Food of the Bests" in Survivor Turkey-Greece is the best example of A. Maslow's "The Hierarchy of Needs" theory. This competition revolves on the axis of re-competition of the competitors, who have been successful in the previous trial and testing; then having been settled down the chosen island in the ocean as individual or a team, during the determined time. According to the scenario, acting with team spirit; apart from that, lobby activities and experiencing different cooperation relationship are being expected from the competitors. These individuals are tended not only to gain respect in his own society or group by setting their own needs but also to tend to concern of desire for "realizing himself" step by step. Audience who watch this television program feel the same emotions, pleasure and excitement of victory together with the competitor whom they identify themselves. In case of the audiences' eating Ruffles, this identification grew stronger and the advertisement of this product is being emphasised with the slogan of "Food of the Bests". The features of capitalist societies; that is winning, being important, competition, capturing, directing, guiding and affecting the decisions are effective in both islands. But; another phenomenon that is advertised indirectly is the islands of Panama State, which are virgin, beautiful and under protection; and also the struggle of living that takes place in this environment is being emphasised. Apart from that, according to the scenario, the beautiful holiday resorts, hotels serves for tourism, unique natural beauty and plant and animal profile of Panama are advertised.



The competitors who win the games are being accommodated in Panama by eating special meals, participating in recreation, and sharing the cultures. Cultural and historical environment are being used as a natural film scene while those things happen. Panama, the locality of the advertisement, makes profit from this advertisement, as well as “Food of the Bests”, being sponsored by Ruffles.





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NIGERIAN MEDIA AS EARLY WARNING SIGNS IN ENVIRONMENTAL RISK REPORTING

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Nigeria is endowed with abundant environment resources. Ironically, the status of her development profile reflects unparallel contradictions, which can be attributed to high population growth rates, and the increasing demand on these resources. As a result of these challenging environmental conditions, occasioned by risky environmental practices/occurrences such as deforestation, pollution, soil erosion, desertification etc., the utilisation of these resources have been hampered for sustainable development and poverty alleviation.

To address these environmental menaces, a multi-sectoral strategy that actively engages both the manpower and material resources of the Nigerian governments, Non-Governmental Organisations (NGOs), and International Organisations, coalesces to stem the increasing tide of environmental risk behaviours/attitudes among Nigerians. Unfortunately however, such efforts have not considerably impacted on the people vis-à-vis responsible/responsive environmental practices.

Among the function of the mass media is surveillance. By this, the media are expected to proactively keep the people abreast on the state of their environment by providing 'early warning signs' on potential risks. However, when one considers the content of Nigerian media, one will be disappointed to find the negligible focus given to environmental issues. As a result, the inherent power of the media to create as well as shape reality in matters of the environment is lacking; indirectly leading to high level indifference and indiscriminate abuse of the environment. The position of this paper is that the Nigerian media have a lot to do in proactively reporting the environment, by acting as early warning signs on environmental risk activities, and the consequence of such actions.



Introduction

*Unless we stop abusing our vital life-support systems, they will fail. We must maintain them, or pay the penalty. **THE PENALTY IS DEATH***" (emphasis mine) (Gordon Young).

Before now, environmental issues in Nigeria, at the most basic level of day-to-day societal engagements are non-issues. Attention to matters of the environment is marked with such utter disregard, and wanton recklessness without due considerations for their probable outcome. This indifference can perhaps, be attributed to an "I don't care attitude" which is deeply rooted in ignorance. It may also be that the people's knowledge and understanding of what constitutes the environment is inherently feeble. Unsuspectingly, therefore, the environment experiences a "collateral damage" that subsequently threatens human survival in the ecosystem. However, contemporary disquiet about the outcome of increasing rate of industrial activities and population growth on the environment, particularly as it relates to pollution of land, air and water, municipal waste, deforestation and loss of bio-diversity resulted in increased national awareness about the critical connection between environment and national development (United Nations Systems in Nigeria, 2001).

The all-important linkage between environment and development is also reiterated in the Millennium Development Goals (MDGs) action plan endorsed by member states at the United Nations General Assembly in September 2000. The MDGs are measurable targets attached to a timeframe for making a difference in the lives of the entire citizens of the world. As part of the eight (8) goals to be achieved before 2015, is *ensuring environmental sustainability*. Others goals are: eradicating extreme poverty and hunger; achieving universal primary education; promoting gender equality and empowering women; reducing child mortality; improving maternal health; combating HIV/AIDS, malaria and other diseases; and developing a global partnership for development (Economic Commission for Africa, 2005).

The thrust of the Millennium Development Goals (MDGs) on the environment are:

- The integration of the principles of sustainable development into country policies and programmes and reverse loss of environmental resources
- Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation
- By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers

According to the 2005 report of the Economic Commission for Africa titled *The Millennium Development Goals in Africa: Progress and Challenges*, countries likely to achieve the targets are:

- *Sustainable development (forest area)*: Algeria, Cape Verde, Egypt, Gambia, Libya, Morocco, Swaziland and Tunisia
- *Access to safe drinking water (rural)*: Algeria, Botswana, Burundi, Egypt, Gambia, Ghana, Malawi, Mauritius, Namibia, South Africa and Tanzania
- *Access to sanitation (urban)*: Algeria, Egypt, Ghana, Libya, Mauritius, Morocco and Tunisia.



Without sounding fatalistic, the “exclusion” of Nigeria from the league of African countries making sustainable progress in environmental initiatives according to MDGs indexical markers, portends a bad omen for the nation’s development efforts. It should suggest to us as a nation that “fire is on the mountain”; and our “space”, undoubtedly, is under the siege of an imminent catastrophe of unimaginable proportion. And the possibility of an improved quality of life for our people can seem remote as a star. Thus, more than ever, the need to urgently rethink our disposition to the environment, and “put money where our mouth is”, seriously begs for attention. Gone were the days, in fact there never was when we could get away with the “rape” of the environment. Now, the consequences of our actions and inactions rudely stare us in the face; taking its toll beyond our sterile imagination.

The story of Nigeria’s environment is a construction of contradistinctive reality. And the profundity of this paradoxical imagery is suitably captured in Soper’s (1995) masterpiece *What is Nature*, cited in Adam, Stuart and Carter (2000:2) thus:

Nature is both machine and organism, passive matter and vitalist agency. It is represented as both savage and noble, polluted and wholesome, lewd and innocent, carnal and pure, chaotic and ordered. Conceived as a feminine principle, nature is equally lover, mother and virago: a source of sensual delight, a nurturing bosom, a site of treacherous and vindictive forces bent on retribution for her human violation. Sublime and pastoral, indifferent to human purposes and willing servant of them, nature awes as she consoles, strikes terror as she pacifies, presents herself as both the best of friends and the worst of foes.

It is true that the environment is capable of both evil and good. However, this delicate balance is altered in favour of the negative through man’s incongruous behaviours. Perhaps, if the environment was viewed as a holistic phenomenon that constitutes the interaction of man with other living organisms (biotic) or nonliving variables (abiotic) such as temperature, rainfall, day length, wind, and ocean currents; as well as the consciousness that an insignificant act of indiscretion can determine whether or not a particular plant or animal species will be successful in its environment (Zimmerman, 2006). If we also realise that the environment is “the life supporting system for human existence and survival as well as provider of physical milieu and the raw materials required for socio-economic progress” (The United Nations System in Nigeria, 2001:75), we probably would have reasonably attended to our environment more cautiously; because what goes round comes round.

The-connect-the-dot theory of environment and sustainable development undoubtedly has ignited or rekindled the urgency, as the case may be to give special attention to the matters of the environment in relation to man’s sustenance in the ecosystem. Some of the landmark initiatives include the 1972 Stockholm Conference on the “Problems of the Human Environment” attended by representatives of no fewer than 113 countries and intergovernmental agencies; followed by the Rio de Janeiro Earth Summit in June 1992, which was attended by more than 178 nations in furtherance of the of the aspirations of the Stockholm Conference (Adenekan, 2001).



The contribution of the Earth Summit in Rio de Janeiro was particularly significant, as it provided a roadmap for environmental protection and sustainable development. According to Strong, Secretary General of the United Nations Conference on Environment and Development (UNCED), cited in Adenekan (2001) the Earth Summit in Rio, pushed “the environment issue into the centre of the development agenda and of economic and sectoral policy and decision making” (UNCED, cited in Adenekan, 2001:5). To this end, the summit came up with the “Rio Declaration” which is made of 27 principles; the philosophy of which represents “a major step forward in establishing the basic principles that must govern the conduct of nations and people towards one another and the earth to ensure a secure and sustainable future”. The summit also produced a document tagged *Agenda 21*, which serves as a framework for extensive cooperation in addressing environment and development issues (Adenekan, 2001:6).

Placing in perspective the upbeat in awareness about the environment as “mainstays of public concern” (Anderson, 1997), Stocking and Leonard (1990), cited in Adam et al. (2000:1) argue that it needs more than a casual treatment in the mediascape. They stated that:

The environment story is one of the most complicated and pressing stories of our time. It involves abstract and probabilistic science, labyrinthine laws, grandstanding politicians, speculative economics, and the complex interplay of individuals and societies. Most agree that it concerns the very future of life as we know it on the planet. Perhaps more than most stories, it needs careful, longer-than-bite-sized reporting and analysis, now.

It is based on the argument that matters of the environment “needs careful, longer-than-bite-sized reporting and analysis, now” (Stocking and Leonard, cited in Adams et al., 2000) that this discourse is conceived, and hopes to be sustained. The reason is obvious: “man...is both a product and shaper of his environment” (Olatunji, 2005/2006:25). And if this submission can be deemed as sacrosanct then, the quality of his environment, will ultimately determine his quality of life.

The intervention of communication as a critical resource in achieving a successful balance in the equation of environment and sustainable development is significantly noteworthy. This fact is underscored in the MacBride Report very succinctly: “[S]ocieties as a whole cannot survive today if they are not properly informed about political affairs, international and local events, or weather conditions,... concerning trends in population growth, harvest results, water supplies, etc.” (MacBride et al., 1980:14-15). Perhaps it is in this connection that Soola (1999) argues that environmental awareness should be regarded as essentially a development issue.

The assumption that public awareness and concern for environmental issues correlates with the relative amount of coverage being generated by the media has provided bases for studying their interrelatedness. Thus, the degree of prominence given to environmental issues determines its legitimization as a major political issue that needs continuous monitoring (Parlour and Schatzow, cited in Adam et al., 2000).



This statement can be said to be true of the Nigerian situation where the relationship between poor environmental awareness and paucity of media coverage of environmental activities have been established (Oha, 1999; Soola, 1999; Nwosu (2005/2006). This incongruity has been sustained by factors such as:

- a) The mass media through its agenda setting function scale-up other issues as more important than environmental issues.
- b) Public disinterest/lack of concern in environmental issues.
- c) Undue emphasis on negative environmental issues.
- d) Focus on event-oriented environmental issues.
- e) Economic consideration.
- f) Competition among mass media (Parlour and Schatzow, cited in Adam et al., 2000; Oha, 1999; Anderson, 1997).

However, the mass media should be made to understand that beyond any parochial interest, they owe society *the* responsibility to provide “a common fund of knowledge which enables people to operate as effective members of the society in which they live...” (MacBride et al., 1980: 14). Behr, cited in Oha (1999:11), also argues that the public communication, which the mainstream media belong, has an unalloyed responsibility to the society. Accordingly,

The individual responsibility of the public communicator toward his fellow-citizens is connected with the many ways in which he can reach men and assist them. The citizens acquire their knowledge of problems and developments of the time, public life, the more immediate or more distant world, events and standpoints, politics and industry predominantly from public communication. It is mostly from this source they acquire their knowledge of contemporary affairs.

This responsibility has been described by Jan Schaffer, Executive Director, Pew Centre for Civic Journalism as a “guide dog” that “challenges people to get involved, get engaged, and take ownership of problems”, without necessarily abandoning its watchdog role. This perhaps provides the platform for Oha’s (1999), argument that news reporting about the environment in a country like Nigeria should focus more on the education of the Nigerian society on environmental protection and development.

It is therefore pertinent that the Nigerian media take into cognizance the urgent need to accord environmental issues priority attention in its reportage. This, however, can only be achieved when media operators themselves can demonstrate “understanding of the actual state of affairs in the society, especially the condition of the environment” (Oha, 1999:16).

Profile of Critical Environmental Issues in Nigeria

The state of Nigeria’s environmental status reflects the extreme benevolence of nature. The abundance of renewable environmental resources such as land, forest, freshwater, coastal areas etc. constitute interplay of strategic developmental resource. However, the relationship between productive capacities of the environment and Nigeria’s development status is highly disproportionate. This is because considerable human practices such as industrial, agricultural etc. pose a great deal of threat to the ecosystem.



The pursuit of socio-economic enterprise in Nigeria, does not take into reasonable thoughtfulness sound environmental practices. As such the incidence of high population growth rate and extreme poverty conditions have constrained the people to make “environmentally unfriendly choices in daily living” (United Nations System in Nigeria, 2001). Evidently, Nigerians display a considerable degree of ignorance about environmental practices and their attendant implications. This possibly has been aided by “weak institutional mechanisms and enforcement of relevant regulations and lack of appropriate policies in certain areas” (United Nations System in Nigeria, 2001).

The United Nations System in Nigeria, in its 2001 “Common Country Assessment” identified key environmental issues in Nigeria. These are agriculture-related problems, deforestation, and land degradation; industrial-related pollution; urban decay and municipal waste disposal; energy-related problems; environmental disasters, biological diversity, climatic changes and CDM.

Agriculture-Related Problems

Two types of environmental problems are associated with agriculture in Nigeria. First, is the inappropriate use and mismanagement of irrigation water, fertilisers, pesticides, and other modern inputs. The intensive use of irrigation in areas with poor drainage has resulted in waterlogged soils and a rise in water table as well as saline soils in some parts of the northern fringe of the country. Also, the undue and inappropriate use of pesticides has negatively impacted on the quality of water, and the resistance of pest to pesticides. The unwarranted dependence on a few carefully bred crop varieties significantly contributes to a loss of genetic diversity and a common vulnerability to the same pest-and weather-related risks over extensive agricultural lands in the country.

Second, are environmental problems closely related with rain-fed agriculture, which have been identified as (i) conversion of forest to agricultural land that results in the loss of biodiversity, climate change and exposure of fragile soils; (ii) expansion of cultivation into environmentally fragile areas such as steep hillsides causing erosion and lowland flooding; (iii) degradation of watershed protection areas, with downstream siltation of dams and irrigation systems and increased flooding; reduction of fallow periods with loss of soil nutrients and organic matter, resulting in declining soil fertility and yields; and (iv) declining resilience in ecosystems, with reduced ability to recover from natural shocks such as drought. Other agric-related problems are bush burning and overgrazing which considerably increases land degradation in the country (ECA, 2005:76).

Deforestation and Land Degradation. The rate at which deforestation occurs in the country is estimated at 3.5 per cent annually. This implies that more than 400,000 ha loss of forestlands. According to the National Planning Commission 2005 Report on “Nigeria: Millennium Development Goals”, “[T]he situation is likely to worsen as demand for wood has outstripped supply... Traditional source of energy has been fuel wood. Over 80 per cent of the domestic demand is met from fuel wood as about 55 million metric tones of firewood are consumed annually”.



Poverty is regarded to be the cause of the total dependence of over 90 per cent of rural population on the forest for livelihood and economic survival. In addition to wood extraction, other harmful environmental practices associated with the rural population are shifting cultivation and nomadic cattle rearing. The effect of these practices are evident in vegetation removal which accelerates rainfall runoff thereby increasing soil erosion, diminished land productivity, and aggravated local flooding (United Nations System in Nigeria, 2001).

Problems of Pollution

The major sources of pollution in Nigeria are land, marine or atmospheric. Land-related pollutions can be further classified into point and non-point sources of pollution. Point sources of pollution are primarily industrial emissions as well as discharges from petroleum production, mining, and other energy exploration activities.

Marine/coastal pollution. The major environmental problems facing the coastal/marine environment in Nigeria include contaminated drinking water, bathing beaches, declining water quality, habitat degradation, loss of fishery resources, marine bio-diversity and eutrophication. Other factors that negatively impact on this environment are population growth, wasteful irrigation, degraded ecosystems, poverty and climate change. Also, sewage is directly discharged into coastal waters posing a risk of contamination both to surface and ground waters because of the relatively high water tables in the coastal zone. The effect of poverty in this regard is noteworthy, as it constitutes a strong impediment to the adoption of new practices and behaviour less damaging to the environment. Resultantly, diseases associated with contaminated and stagnant waters such as diarrhoea and malaria are common in densely populated areas where the lowest income group live in the country (United Nations System in Nigeria, 2001).

Industrial Pollution. Nigeria's quest for industrialisation is devoid of adequate and appropriate balance in strict environmental monitoring. To these end industrial/manufacturing activities sometimes have unwholesome effects on the environment. Accordingly, problems of environmental pollution have been associated with major industrial areas of Lagos, Agbara, Kaduna, Kano, Aba, Onitsha, and the Niger Delta area. It is important to note that environment problems arising from industrial pollutions vary from one area to another, depending on the scale of production and manner of industrial process involved. For instance air pollution has been recorded in the neighbourhood of cement of industries; water pollution has been experienced in areas of operations of textile mills, tanneries, petrochemical and paints with untreated water released into streams and open drainages etc.; indiscriminate mining and related activities make the land bare and unproductive. Examples of mining wastelands exist in Jos, and its environs; Adamawa, Bauchi, Borno, Enugu, Niger and Yobe States.

The problem of pollution occasioned by oil exploration is not only an environmental problem within the precincts of its immediate locality, but also a national malaise. Activities of oil companies have resulted in spillages which have caused harmful ecological damages in the Niger Delta region. Some of these problems include damage to lakes, rivers and ground water and destruction of marine life and plants, and loss of aesthetic of natural beaches etc. the protest against continued degradation of the Niger Delta environment led to the execution of writer-journalist-activists Ken Saro-Wiwa on November 10, 1995 (Wilson, 2005/2006).



Another environmental hazard caused by the activities of oil companies is gas flaring. Flaring of gases by these companies is estimated at 96,513 metric tones of carbon dioxide (CO₂), which accounts for 28 per cent of total gas flared in the world (United Nations System in Nigeria, 2001). The good news is that there has been a reduction in the gas flaring level from 68 per cent in 1999 to about 40 per cent in 2004, nevertheless, “commitment towards the timely termination of gas flaring in Nigeria” is somewhat inadequate (National Planning Commission, 2005).

The United Nations System in Nigeria (2001) attributed environmental problems arising from industrial activities, essentially to “inappropriate development patterns where industry has been allowed to develop in isolation from environmental issues, goals and actions”.

Energy-Related Problems

The erratic nature of electricity supply in Nigeria, has given rise to alternative and widespread operation of a wide range of power generation equipment to drive industrial, commercial and domestic activities. The effect, is the emission of lead into the environment, with serious health implications on the people. Also, the traditional practice of the use of fossil fuels such as woods and coals for domestic cooking, has contributed very significantly to air pollution and climatic changes through the discharge of CO₂ and other greenhouse gas (United Nations System in Nigeria, 2001; National Planning Commission, 2005).

Environmental Disasters

Environmental-related disasters that seem peculiar to Nigeria are drought and desertification, ocean surge and floods and erosion.

Drought and Desertification. These constitute the major environmental problems collectively afflicting the fifteen (15) northern states of the country. The entire areas north of latitude 15° are either desertified or under the threat of desertification. The country loses about 351,000km² of its landmass to the desert which is advancing southwards at the rate of 0.6 km per year. Natural forces such as extreme and persistent climatic events play crucial roles as well as, direct anthropogenic pressures such as overgrazing, over-cultivation and deforestation have intensified the incidence of drought and desertification in these parts of the country. In addition, the FGN's (1997) report, cited in the United Nations System in Nigeria's (2001) report noted that the “intensification of the use (and abuse) of fragile and marginal ecosystems has led to progressive degradation and continued desertification of marginal agricultural lands even in the years of normal rainfall”. By and large, the consequence of these environmental problems is severe disruption of the socio-economic development of the affected areas, which is evidently marked by crop failure and death of livestock (United Nations System in Nigeria, 2001).

Ocean Surge and Flood. Nigeria's coastal belt lies north of the equator, and is very low lying with nowhere exceeding 3 meters above mean sea level. Increasing human activities as well as natural forces combine to facilitate the prevalence of ocean surges. A typical example is the over flow of the Lagos Bar Beach by the surging waves of the Atlantic Ocean, which has persistently reoccurred since 1990, threatening lives and properties.



Also, the low nature and the topography of the entire Nigerian coastline makes this area particularly vulnerable to the occurrence of flooding. Coastal flooding occurs in the low-lying belt of mangrove and freshwater swamps, while river flooding occurs in the flood plains of the larger rivers during rainy seasons. Urban flooding are more usual in towns located on flat or low-lying terrain especially where adequate provisions have not been made for surface drainages or drainages that have been blocked by municipal wastes and eroded soil sediments (United Nations System in Nigeria, 2001).

Erosion

According to a Federal Government of Nigeria reported, cited by United Nations System in Nigeria (2001) it approximated that over 90 per cent of the country's total land area is under sheet, rill and gully erosion. For instance, gully erosion has destroyed vast areas of land in the south-eastern part of Nigeria. The disastrous effect of erosion in Anambra state alone is estimated as causing losses of over 13 million tonnes of soil, which amounts to over 300 million naira annually (Anon, cited in United Nations System in Nigeria, 2001). Sadly enough, the situation has worsened (United Nations System in Nigeria, 2001).

The effects of erosion are "depletion of farmlands, loss of forest resources and reduction in agricultural outputs.... loss of land for other developmental purposes, destruction of properties and social amenities, as well as loss of lives" (United Nations System in Nigeria, 2001).

Urban Decay and Municipal Disposal

The increasing urbanisation in Nigeria has brought with it the attendant problems of waste disposal and management. Thus, the problem of solid waste disposal has become one of the most intractable environmental problems in the country. Recent development has brought about a phenomenal increase in the volume of wastes generated on a daily basis in the country. This can be attributed to a number of factors such as increase in population growth, urbanisation, industrialisation and general economic growth.

It is saddening to note that most of the urban centres in the country lack effective system of refuse collection. Therefore, most households resort to open dumping of refuse on the highways, roadside, in drainages, in rivers/streams or burnt etc., which obviously constitutes health hazards. In view of these unwholesome disposal practices, "Nigeria (sic) cities have been described as some of the dirtiest, the most unsanitary, and the least aesthetically pleasing in the world" (Mabogunje, cited in United Nations System in Nigeria, 2001).

Climate Change and CDM

The critical connection between climate change and sustainable development cannot be underscored. This apparently makes it a crucial environmental concern. The reports of the Intergovernmental Panel on Climate Change noted that the "last decade has been the warmest in hundreds of years, and many parts of the world have suffered major heat waves, floods, droughts and extreme weather events" (United Nations System in Nigeria, 2001).



While Nigeria's contribution to the total volume of global greenhouse gas emissions is rather negligible, at 0.3 per cent in 1996, there has been a steady increase over the years. The climatic change that may occur as a result of global warming is likely to have significant implications on the country. For instance, with a one-meter sea level rise, Nigeria could lose over 18,000 square kilometres of coastal land, and well over 3.8 million people affected (WMO, cited in United Nations System in Nigeria, 2001).

Proactive steps to make the production mechanism and processes of Nigerian industries towards a more environmental-friendly initiatives, in line with provisions of CDM, would reduce the country's contribution to the debilitating effects of greenhouse gases.

Biological Diversity

Nigeria's abundant biological endowment is threatened by the degradation of the ecosystem as a result of economic motives. Considering the disproportionate rate of replacement of endangered species and arbitrary logging and felling of trees; Nigeria's wildlife is rapidly declining. Animals that have been recorded to be extinct include cheetah, the pygmy, hippopotamus, the giraffe, the black rhinoceros, and the giant eland. In all between 10 and 12 species of primates, including the white-throated guenon species of primates and sclater's guenon are under threat, while an estimated 484 plant species from 112 families are also threatened with extinction as a result of habitat destruction and deforestation (FGN, cited in United Nations System in Nigeria, 2001).

Another threat to the nation's biodiversity environment is in the marine environment. The introduction of exotic species and destruction of mangrove communities that shelter a diverse marine community resulted in the preponderance of aquatic weed water hyacinth, *Eichhornia crassipes*. The eutrophication of the lagoons due to nutrient enrichment by unprocessed fertiliser effluent is believed to be responsible for the prolific growth of the weeds which forms a mat covering the water surface thus making fishing and navigation almost impossible. Others are *Nypa Palm*, common in the Niger Delta region; the *Indopacific Sea Urchin*, *Temnopleurus toreumaticus* have constitute major pests to artisan fishermen in the estuaries in the eastern flank of the Niger Delta (UNIDO/FEPA, cited in United Nations System in Nigeria, 2001).

Media as Early Warning Signs (EWS)

The power of the media to reflect, shape and recreate reality is never in doubt. In achieving this "feat", the media "structure issues" (Lazarsfeld et al., cited in McQuail, 1987), in order of priority. Therefore, there are evidences that suggest a causal relationship between the order of importance given in the media to issues and the order of significance attached to the same issues by the public in general as well as politicians (McQuail, 1987). This realisation has prompted its engagement in driving development initiatives, especially in developing countries. Nwosu (1990) attests to this fact when he noted that communication is at the heart of development, while its catalytic effect on other sectors of the economy can not also be ignored. The journalist therefore, in discharging his traditional mandate of informing, educating and entertaining should also be aware of the inextricable tie of his news item as text to his social context, as well as his relationship as a producer to his audience. A relationship that should be defined by what impact and function news items have on the society (Oha, 1999).



For the media to effectively perform this oversight function in relation to the critical issues of the environment, it has to serve as a wake-up call to the people on the dangers of “environmental problems, to the urgency of saving/protecting the environment, and to the development of such hitherto neglected areas such as rural parks, village squares, lakes, streams, etc.” (Oha, 1999). It is therefore, contingent upon the media to “ensure that the demand on the environment... does not exceed its carrying capacity for the present as well as the future” (Institute for Public Administration, 1995).

The increasing deterioration of the environment through unhealthy practices can be adduced to the very little knowledge and understanding the people have of the possible implications of such actions or inactions. Thus, in order to promote sound environmental practices, the people as well as policy makers need to know a number of things about the potential real cost of environmental abuse and degradation, and the ways around it.

It is against this background that the surveillance function of the mass media takes the centre-stage. The surveillance function of the mass media can be divided into two main types, namely “beware” and “instrumental” surveillance. However, this discourse shall focus on “Beware Surveillance”, which occurs when the media informs the people about potential threats, which could be environmental, social, economic, political etc. (Dominick, 1999). This “beware surveillance” function, within the structure of this paper is referred to as “early warning sign”, and in relation to environmental issues.

The concept of “early warning” has its origin in the military. It is a system devised to prevent surprise attacks or military accidents. However, the application of the concept has been extended to cover such areas as “high politics”, conflict as well as the environment (Clingendael, 1996). The goal of “early warning” is to “nip in the bud” anything that is capable of destabilising the wellbeing of the society. Thus, the mass media acting as “early warning signs” in environmental issues are conceived of as providing relevant and appropriate information based on empirical data to head off high risk environmental practices. By this token, the media also have the responsibility of persuading policy drivers to act upon the warning. Fundamentally, the task of the media as “early warning signs” is aimed “on the one hand, at “upstreaming” politicians, policy and decision-makers, and “downstreaming” the mass of the larger populace, on the other, with a view to sensitizing and conscientizing them for sustainable environmental awareness” (Soola, 1999:32).

What this translates to is that, it is absolutely necessary for Nigerian media to develop a distinct vocabulary to interpret the environment as ‘news’ for the benefit of audiences in order to understand the long-term implications of their actions for their own well-beings. Unfortunately however, the media in Nigeria in the coverage of the environment “do not report on risks, they report on harms” (Singer and Endreny, 1987:10). This apparently has represented environmental crisis “as a specific event-oriented catastrophe”. However, as Wilkins and Patterson (1990), cited in Adam et al. (2000) maintain:



While risk analysis indicates that not all risks are alike, news media coverage of a variety of hazards and disasters tends to follow predictable patterns. Neither the unpredictability nor the high degree of complexity of hazards fits neatly into a newsgathering process that places a high priority on meeting deadlines. Therefore, news about hazards often is moulded to the medium. A day-long debate about the location of a toxic dump is reduced to 30-second 'sound bites' from each side and footage about angry demonstrators staging 'pseudo-events' for the benefit of the cameras. In the end, the audience is entertained by the hazard without being informed about it.

Adam et al. (2000) noted that the indeterminacies associated with contemporary environmental hazards are of an ontological-structural and epistemological-cosmological nature; and their reach into modern societies' knowledge bases is far deeper and their permeation of that social fabric much more extensive than notions of 'uncertainty' or 'unintended consequences' would otherwise lead us to believe. Against this background, Beck, cited in Adam et al. (2000) pointed out that as a result of the threat to people, animals, plants and the elements that sustain life, modern societies, Europe and North America to be precise, more than ever, have become aware of the critical connection between these seeming disparate environmental 'beings' and man's survival. Therefore, they are encountering forms of knowledge that have been progressively eroding the organising tenets of earlier 'meta-narratives' held to be consistent with the 'traditions' of their intellectual heritage.

The challenge before the Nigerian media is that they have the social responsibility mandate to educate the people on the state of the environment, especially, on high risk practices. This is particularly pertinent in the light of the 2006 United Nations Environment Programme report, cited in the *Punch* newspapers. According to the report, "in Nigeria, between 1976 and 1990, there were estimated 2,670 separate pipelines spills. The entire region and habitats like mangroves and natural resources such as fisheries are considered vulnerable given the pattern of ocean currents and potential for spills from exploration, production and tankers". The report further indicated that "an estimated 50 per cent of Nigeria's mangrove may have been lost to industrial activities including oil operations. Dredging and the disposal of dredged waste are also thought to be an issue in places like the Niger Delta". Sadly, these threatening situations are 'man-made'; and to clear these wastes, enormous amount of resources will be needed-what could have been avoided through adequate environmental risk reporting by the media. Robinson and Levy, cited in Singer and Endreny (1987), therefore, advise that effective environmental news stories most likely to be recalled are those involving especially dramatic news of real or potential danger. This evidently suggests a correlation between environmental risk reporting (early warning) and people's perception of risk (Singer and Endreny, 1987).



Conclusion

In this paper, the argument is that there is a critical connection between Nigerians disregard and disrespect for the environment, because the media have inappropriately exercised its power by according little or no salience to environmental issues. It is therefore imperative that environmental beats be equipped to cover the environment with a sense of immediacy and pertinence by telling the story in human terms using bewildering facts and figures. The media need to put risk in perspective; “not only the perspective of alternative hazards, which would be asking a good deal, but even the perspective of how likely such outcomes are: that is, the risk of their occurrence” (Singer and Endreny, 1987). It is only when the media rise to this occasion that the nation’s march towards sustainable development can be participatory, meaningful and fully harnessed.

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ROLE OF MEDIA IN CONSERVING THE CULTURAL HERITAGE

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Within the scope of the work entitled “Role of Media in Conserving the Cultural Heritage”, being one of the most important problems in surviving the historical environment and its transfer to the future, the lack of awareness and sensitivity of the people concerning the matter and the effect of media within this context are studied thoroughly.

The objective of the work is to determine the striking differences approximately within 30 years by examining education, which constitutes one of the striking elements affecting the success of preservation, in terms of the role of means of press and broadcast effective within the context of educating people to this effect. Constituting two of the breaking points concerning preservation in our country, the years 1973 and 2004 have been dealt with and evaluated as time foci.

Historical and comparative methods have been used in the research. Developments concerning preservation in Turkey are dealt with within historical context and the influence of media is put forth by studying the news and articles concerning historical environment, preservation and restoration in Cumhuriyet, Yeni Asır, Sabah, Hürriyet, Akşam and Milliyet newspapers selected as samples. Therefore, the years 1973 and 2004, when the laws were enacted, are determined within the context of the reasons preparing and the following years 1974 and 2005 are determined as the period when the influence of the law was observed more heavily and the change in the process is studied comparatively.

In the study, the selected newspapers belonging to 1973, 1974, 2004 and 2005 are searched thoroughly, and within the context of TV programs, broadcasts concerning the issue in the same years are tried to be determined.

The work is studied with the subtitles of the development of the fact of preservation in Turkey in the historical process, the role of education in preserving the historical environment and the media as well as some news in media within a period of 30 years concerning the preservation of cultural heritage.



1. DEVELOPMENT OF THE FACT OF PRESERVATION IN TURKEY IN HISTORICAL PROCESS

It can be stated that our country, which is one of the places having the richest architectural heritage in the world, ranks in a consecutive position in activities of preservation when compared with the Western states. When the activities in the 19th century are evaluated, one can talk about enterprises towards the museum field and Asar-ı Atika Nizamnameleri (Regulations) which were in force for years. It is observed that although they didn't have the characteristics of laws during the Ottoman Era, the regulations, which were the order of rules, provided solutions to problems concerning preservation for years. Asar-ı Atika Regulation has an important place in Turkish history of culture since it was the first important step in the preservation of ancient works and it was used for years. The first of these regulations, which were renewed as their defects were seen, was prepared in 1869 and it was about restricting the excavations carried out by the European and providing the supervision of the archeological works found during the excavations.

Every work by the human being inherited from the previous periods was included within the scope of "ancient work" in Asar-ı Atika Regulation II prepared in 1874. Although it was accepted that ancient works belonged to the state, the philosophy that the works found during the excavations were shared among the person having found them, the owner of the land and the state was adopted. So as to eliminate this conflict, the system of sharing one thirds was abolished by Asar-ı Atika Regulation III in 1884 and it was accepted that each ancient work was the property of the state. Since the regulation had the most comprehensive explanation in Asar-ı Atika Regulation IV prepared in 1906, each work having historical characteristics was taken within the scope of the law on preservation. Thus, the first three regulations were towards the preservation of archeological works whereas there is an approach comprising all works in the last one.

After the last regulation, it is observed that various activities were carried out concerning preservation.

In 1917, Muhafaza-i Abidat Nizamnamesi (Regulation), which was the first legislation including only immovable cultural assets, was accepted and the Museums were reorganized in 1934 and the Charitable Foundations were reorganized in 1935. In 1951, the Supreme Council of Immoveable Ancient Works and Monuments was opened.

While the activities of preservation were carried out with the decisions of GEEAYK (the Supreme Council of Immoveable Ancient Works and Monuments), the Preservation Councils giving local services appeared after 1980.

The Law on Ancient Works No. 1710 entered into force in 1973. However, when its deficiencies were observed, the Law on Preserving the Cultural and Natural Assets No. 2863 was put forth in 1983. Some articles of the law were amended in 1987 and the law No. 3386 was arranged.



In the Law on Ancient Works No. 1710, new definitions were brought to the issue of ancient works to be preserved and structures, complex of buildings adjacent to mosques called külliye and the preserved historical sites, which have monumental architectural values, were included within its scope.

The expression of “ancient work” was replaced by the expression of “cultural and natural asset” in the law No. 2863. While all the historical works were described as the property of the state in the law, the properties of the charitable foundations were considered separately. The articles of contribution fund to repair of cultural and natural assets required to be preserved, and of nationalization of the lands having the characteristics of cultural assets through bartering, did not reach their objective.

With the Law No. 3386, which amends some of the articles of the law No. 2863, definitions concerning movable and immovable cultural and natural assets required to be preserved were determined, the proceedings and activities to be carried out were arranged and the foundation and duties of the organization to take the principles and decisions required were specified.

The Law on Preserving the Cultural and Natural Assets No. 5226 having entered into force in 2004 and the Law on Making Amendments in various Laws constitute a significant step towards eliminating the defects of the previous law. One of the most important innovations of the law is that it produces a solution towards the economic dimension which is one of the main problems of preservation and is the transfer of shares from real estate taxes to historical structures. Again, the fact that the preservation of historical environments takes place among the fundamental duties of Municipalities in the Law on Municipalities is a positive development.

2. ROLE OF EDUCATION IN PRESERVATION OF HISTORICAL ENVIRONMENT AND THE MEDIA

One of the most important subjects concerning the preservation of historical environment is the awareness and sensitivity of preservation and this is achieved only through education. It is possible to have children and young people gain background and sensitivity through lessons or units within the scope of formal education. It is possible to have adults gain awareness of preservation via meetings and especially the contribution of media.

Being the element of cultural continuity, preservation is possible through making cultural awareness gained. The education on preservation is multi-dimensional and differs depending on the social role of the person it is given (the education of experts, education for training experts, the education of the people and the education of politicians and administrators). Education also varies according to the quality of the works to be preserved (such as architectural work, archeological work, movable work) (Akyüz, 1999).



Apart from the people to become experts in restoration, it is obligatory in our country, which has a rich cultural heritage, for the architects and city planners to work at the public institutions and organizations, municipalities, in the ministries or to work independently to receive a comprehensive education concerning preservation. Taking the proper steps in preservation is possible with the sensitivity of these people and administrators who are in the position of directing with their decisions.

The education of people will be dealt with in this study. The culture of preservation having become widespread is a continuous education required to be given to any section of the society and to any occupation groups.

In the Standing Conference of the European Local and Regional Authorities, held in Strasbourg in 1992, it was pointed out that informative policies are required for the preservation of urban heritage as the Urban Constitution.

It is stated in article 12 of the Regulation of Education on Preservation as follows: "Sensitivity to preservation and education should begin in primary school, continue at the university and furthermore, they should exist outside schools and universities. The education institutions play a very important role such as reading and understanding our cultural heritage and its elements by increasing the visual and cultural experiences of the candidates wishing to become experts in preservation..." (Binan, 1999).

While young people are educated concerning the issue through formal education, it is possible to have adults gain and develop awareness of preservation through meetings, courses and, most importantly, through media, in other words, radio, TV programs and means of press and broadcast. Within the context of developing awareness of the environment, the contribution of publications such as bulletins is possible. Since media reaches very extensive masses and its influence is great, its role concerning this issue is very big. Not only documentaries and discussions concerning the issue but even also the programs choosing the historical environment as their place will contribute the spread of this awareness, in other words, the culture of preservation.

The role of media in forming the culture of preservation is put forth by comparing the news within this context in a process of approximately 30 years.



3. SOME NEWS IN MEDIA WITHIN A PERIOD OF 30 YEARS CONCERNING THE PRESERVATION OF CULTURAL HERITAGE

Articles and news having appeared in media within the context of historical environment, preservation and restoration in Turkey are studied thoroughly by selecting *Cumhuriyet*, which is one of the newspapers mentioning cultural articles heavily, and *Yeni Asır*, since it includes news related to the Aegean Region heavily, *Sabah*, *Milliyet* and *Akşam* as samples.

Within the context of the atmosphere, which prepared enacting the laws in question, and immediately after it, the selected process is dealt with within the scope of the years, when the laws were enacted as well as the following years when their influences were observed clearly.

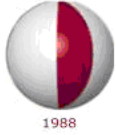
When the news having appeared in *Cumhuriyet* in 1973 is examined, it is observed that the ones concerning smuggling historical works ranked the first. Other subject headings are as follows:

- the historical structures having burnt,
- surviving and preserving historical structures and making use of them in terms of tourism,
- the historical works having been revealed and the excavations,
- the activities in the historical structures.

The articles in the columns and the special columns

- In the column of *Turizm 73*, within the context of the promotion of the settlements of Antalya, Alanya, Bursa, Akçay, Ören, Ayvalık, Erdek, Marmaris, Köyceğiz, Göreme, Çanakkale, Amasra, Fethiye, Mersin, Çeşme, Rize, İçel-Silifke, Anamur, Trabzon, Hatay, Pamukkale, Adana, Urfa and Edirne, their histories and historical structures are mentioned.

- In the column entitled *Olaylar ve Görüşler* (Events and Opinions), the article by the Archaeologist Erdem Yücel, which touches upon the fact that the Turkish Houses disappear due to reasons such as fire, constructing roads and constructing apartment buildings instead of them (7.31.1973-Cumhuriyet),
- the article by Melih Cevdet Anday entitled “Boğaziçi ve Doğa” (the Bosphorus and Nature) about the facts that the architectural works in the Bosphorus have become memory since they have not been able to survive up to now and that it is necessary to consider the effect of the Bosphorus Bridge on the straits in this context (8.3.1973-Cumhuriyet) ,
- The series of articles by Cemil Sönmez entitled “Anadolu Kaleleri” (the Anatolian Castles) where he introduces the castles in many places in our country (8.11-17.1973-Cumhuriyet),
- the article by Selman Uslu entitled “Orman Yangınları ve Düşündürdükleri” (the Forest Fires and the Things They Make One Think of) (9.15.1973-Cumhuriyet),
- the article by Selahattin Çoruh entitled “Eski Eser Kaçakçılığı” (Smuggling Ancient Works) (5.11.1973-Cumhuriyet) ,
- the series of articles by Özgen Acar composed of six sections in the column entitled “Burası Anadolu” (Here is Anatolia) (9.23-28.1973-Cumhuriyet) ,



(Within the scope of the article, it is stated that there are 43 thousand historical works in Turkey and it is stressed that the purchasing allocation of 87 museums in our country is 1 million liras.)

- the article entitled “Arkeoloji Kongresi” (the Congress of Archaeology) in the column entitled “Olayların Ardındaki Gerçek” (Truth behind the Events) (9.28.1973-Cumhuriyet),
- the articles by Yalçın Pekşen entitled “İstanbul ve Boğaziçi Hasip Paşa Yalısı olmadan düşünülemez” (İstanbul and the Bosphorus can not be imagined without Hasip Paşa Water-side Residence) and “Hasip Paşa Yalısı Yeniden Yapılır” (Hasip Paşa Water-side Residence can be reconstructed) in the column entitled “Bir Yangının Ardından” (After a Fire) (10.30.1973, 12.3.1973- Cumhuriyet)

can be stated.

It can be pointed out from the news in 1973 that concerning the smuggling of historical works, the penalties regarding this issue are insufficient and that the news entitled “Trabzon’daki Katolik Kilisesi’nden Baküs heykelini kaçırın iki papaz yakalandı” (Two priests having smuggled the sculpture of Baküs from Catholic Church in Trabzon are caught), “Tarihi eser kaçakçısı Amerikalı tutuklandı” (American Smuggler of historical works is arrested), “25 yıldır Türkiye’de yaşayan Alman’ın evinde, 100 milyonluk tarihi eser ele geçirildi” (Historical works of 100 million liras are caught in house of the German living in Turkey for 25 years), “Bir ihracatçının evinde paha biçilmez 100 parça tarihi eser ele geçirildi” (100 pieces of priceless historical works are caught in house of an exporter) attracted the attentions within the context of the samples regarding the issue (6.21.1973, 7.15.1973, 8.3.1973- Cumhuriyet)

It is conveyed through the law enacted in this period that museums were assigned with supervising the activity of collecting and that it is necessary for the ones collecting ancient works to submit a declaration within a year for the works they have (7.11.1973, 5.7.1973 – Cumhuriyet).

Within the scope of the historical structures having burnt, the news concerning the burning of a wooden building of the annex of Yıldız Palace, an old mansion in Beşiktaş and İstanbul Hasip Paşa Water-side Residence can be stated. Upon setting the water-side residences on fire deliberately within the period in question due to the property speculation, it is expressed that the Ministry will nationalize the building sites of the historical water-side residences, which have burnt and collapsed, so as to preserve the water-side residences (6.26.1973 – Cumhuriyet).

The facts that Hünkar Kasr (Castle) was restored as a carpet museum and that the real estate of the charitable foundation in Istanbul will be used with a touristic purpose can be mentioned among the news concerning the works, which have been considered to be used with a secondary function. Within this context, the historical Pera Palas and Ankara Palas can be sampled within the scope of the reorganized structures according to current issues without changing function (2.17.1973, 5.6.1973, 11.7.1973- Cumhuriyet).

Regarding the activities taking place in the historical structures, it is possible to mention the opera “Saraydan Kız Kaçırma” (Abduction from the Seraglio) in Topkapı Palace and the exhibitions in museums due to İstanbul Festival (7.13.1973 - Cumhuriyet).



As an example of negative interferences to historical structures, it is observed that one wall of Sinan's Edirne Rüstem Paşa Caravanserai was pulled down, a direct entrance from outside was constructed and a bar is operated (8.9.1973 - Cumhuriyet).

In this period, it is possible to state a photograph and its caption having taken place on the front page in Cumhuriyet as a striking stress for the preservation of historical environment. In the news entitled "Hem Çöküyor, Hem Göçüyor" (Both Collapses and Passes on) among these, it is told that the oriel-window houses in ancient İstanbul are left among huge apartment buildings and oppressed and they have turned into debris. In the caption of the photograph entitled "Son Demlerini sürüyorlar" (They live their last moments), it is pointed out that the civilized countries of the West pay attention to preserve their ancient works while, in our country, the old houses and mansions in İstanbul are pulled down in a competitive speed and an example is given from Ortaköy. Such presentations are significant within the context of making a striking stress on the issue and awaking awareness (7.4.1973, 9.4.1973 – Cumhuriyet).

Entrance fees to the museums can be mentioned as a striking example among the news in 1973. While it is said that the fees were increased between the rates of 100 and 150 % in April 1973 and an increase was observed for the second time since 1971, it is expressed that beginning from October 29th, the museums and historical places would be visited free of charge for a week due to the 50th anniversary of the Republic (4.12.1973, 9.1.1973 – Cumhuriyet).

When the articles and news, having appeared in Cumhuriyet in 1974 are dealt with, it is striking that the ones concerning "smuggling ancient works" were at a rate which can not be underestimated.

- historical structures having burnt,
- property speculation, plunder, the wearing out of the historical environment,
- the historical works made use of with secondary function,
- restoration activities,
- activities carried out in historical structures

can be perceived as grouping within the scope of the other news.

However, a striking condition in whole of the data concerning the issue in the newspaper is that the place, allocated for these issues in the articles on columns and special columns, is more than that of singular news. Within this context, it is possible to mention

- the article by Oktay Akbal telling about the reopening of Ankara Palas within the scope of the column entitled "Geçmişi Yaşamak" (Living the Past) (1.14.1974 – Cumhuriyet),
- the article by Nevzat Üstün entitled "İstiklal Caddesi Sokağı" (Street of İstiklal Avenue) where he describes a street of memories at one of the historical corners of İstanbul (5.11.1974 – Cumhuriyet),



- the article by Şevket Süreyya Aydemir where he also mentions the description of the structure, which was the base of the Committee for Union and Progress, in the article entitled “Pembe Konak’ın Öyküsü” (The Story of the Pink Mansion) in the column entitled “Olaylar ve Görüşler” (Events and Opinions) (5.13.1974 – Cumhuriyet),
- within the scope of studying carefully various touristic foci in Turkey such as Bodrum, Fethiye, Finike, Antalya, Alanya, Anamur, Sinop, Amasra, Akçakoca, Çeşme, Ayvalık, Ören, Eskihisar, Akçay, Yalova, Erdek, Gemlik, İçel, Antakya and Tekirdağ, articles in the column Turizm 74 which also mention the histories and historical works of the settlements,
- articles, having taken place as two series entitled *İstanbul ve plan* 1-2 (İstanbul and plan 1-2), which deal with the plan activities done regarding the city, the concept of master plan and the credits of the World Bank and which touch upon the fact that the preservation of the Bosphorus has a significant place in the master plan and that illegal neighbourhoods have occurred on the ridges of the Bosphorus (6.4-5.1974 – Cumhuriyet),
- the series of articles by Muammer Sun and Murat Katoğlu in seven sections in the column entitled *Türk Kalarak Çağdaşlaşmak* (Becoming Civilized By Remaining Turkish) (6.13-19.1974 – Cumhuriyet),
- the article by Prof. Asım Mutlu entitled “Türk Evleri ve Mahalleleri” (Turkish Houses and Districts) which stresses the necessity of promoting the Turkish houses and of taking any measures for preserving old structures (7.6.1974 – Cumhuriyet),
- the article by Şevket Süreyya Aydemir entitled “Bu Saraylar Kimin” (To Whom These Palaces Belong) which states that it is necessary to look after the palaces and kasrs (summer palaces) in İstanbul (7.15.1974 – Cumhuriyet),
- the article by Dr. Nurettin Elbir entitled “Orman Varlığımız ve Yangınlar” (Our Forests and Fires) concerning the disappearance of natural assets (8.14.1974 – Cumhuriyet),
- the article by Seha Meray entitled “Ne Sizindir Ne Bizim” (Neither Yours Nor Ours) in the column of Olaylar ve Görüşler (Events and Opinions) touching upon the duties of Mimar Ağa such as the supervision and construction, according to the rules, of the structures conveyed from the book of Beyzade Kantimur entitled *Osmanlı İmparatorluğu Tarihi* (the History of the Ottoman Empire) (9.12.1974 – Cumhuriyet),
- the article by Çelik Gülersoy entitled “Eski Eserler Kanunu” (Law on Ancient Works) in the column entitled Olaylar ve Görüşler (Events and Opinions) (12.14.1974 – Cumhuriyet),
- the articles by Erdem Yücel entitled “Boğaziçini kurtarmak için özel bir imar kanunu gerekli” (A Special Law of Improvement is necessary to save the Bosphorus) and “19. Yüzyılın Sonlarında Başlayan yozlaşma Bugün de Sürüyor” (Degeneration begun in late 19th century still continues) in the column entitled *Tarihi Görünümünü Yitiren Boğaziçi* (the Bosphorus having lost its Historical Appearance) (10.26-28.1974 – Cumhuriyet) ,
- the column article by Sezer Tansuğ entitled “Bir Müze Serüveni” (A Museum Adventure) (10.30.1974 – Cumhuriyet),
- the article by Şükrü Kocagöz entitled “Çevre ve Kamuoyu” (The Environment and the Public Opinion) (12.14.1974 – Cumhuriyet).



When the column articles and the corner articles are examined, it is perceived that they reflect a content strengthening the news concerning the issue in the newspaper. For example, the intensive plunder in İstanbul and the negative changes in the natural and historical assets in the Bosphorus are almost elaborated by the articles of İstanbul and plan 1-2, “Bu Saraylar Kimin” (To Whom These Palaces Belong), which states that it is necessary to look after the palaces in İstanbul, “Orman Varlığımız ve Yangınlar” (Our Forests and Fires), concerning the disappearance of natural assets, “Türk Evleri ve Mahalleleri” (the Turkish Houses and Districts), which points out that it is necessary to take measures concerning the preservation of old houses, and they try to increase the awareness of the people to this effect.

It is perceived that the promotion of historical places were carried out within the scope of dealing with various touristic towns of Anatolia in the section published on Sundays and covering approximately a half page in the newspaper as the column of Turizm 74 in summers and Kış Turizmi (Winter Tourism) in winters by mentioning the histories and the historical works of the settlements.

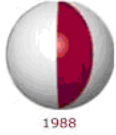
It is possible to mention the Cypriot Operation within the striking events in Turkey in 1974. The selected newspapers mentioned the news regarding this issue heavily. The back page of Cumhuriyet, which was normally allocated for sports, was allocated for the Cypriot Operation during this process and the other one was mentioned on the inner page.

Another fact in this period is the rapid construction observed in the Bosphorus in İstanbul. It is stated that so as to prevent the setting the historical water-side residences on fire deliberately and construct new multi-storey constructions due to overincreasing urban land values, the water-side residences, where fire was set, would be nationalized immediately and the others would be nationalized in time, as much as it is afforded, by the Ministry of Tourism and Promotion.

In the news concerning the fire of Villa Zarif in Tarabya, it is pointed out that the downstairs of the structure, which is one of the historical water-side residences of the Bosphorus, was used as a restaurant and the upper floors were empty and it is conveyed that the fact that the fire started on the second floor increases the possibility of arsoning fire (10.17.1974 – Cumhuriyet).

The statement that the fires started in many places simultaneously in the fire news concerning various historical water-side residences in the Bosphorus reflects that the fires in the structures were set deliberately for the purpose of plunder.

The news in question is thought-provoking since it shows that the historical water-side residences in İstanbul and especially in the Bosphorus are destroyed rapidly. Within this context, news such as “İstanbul yağma ediliyor” (İstanbul is being plundered), “Yeniköy sırtları yağma ediliyor” (The ridges of Yeniköy are being plundered) and “İstanbul’da orman alanları da yağmalanıyor” (The forest areas of İstanbul are also being plundered) in the newspaper is striking.



Apart from this news pointing out the disappearance of historical works, the suggestions and warnings of experts concerning the issue are also striking. In the news entitled “Özel bir Boğaziçi Kanunu çıkarılması önerildi. Boğaziçi doğal ve tarihi değerini yitirdi.” (Enacting a special law on Bosphorus is suggested. The Bosphorus loses its natural and historical value.), Çelik Gülersoy, Director General of TURING (Turkish Touring and Automobile Association), is conveyed to have said that the Bosphorus is special with its natural beauties and historical structures, that it can not be preserved by a general development regulation or a law on forests, that otherwise, it would become a pile of stones and an industrial zone and that it is required to enact a Law on the Bosphorus (3.12.1974 – Cumhuriyet). Gülersoy criticizes the protective laws concerning the issue as follows:

He said “The newly enacted Law on Preserving Ancient Works is striking in the preservation of the history and architectural features. However, enacted half a century after the first one, this law did not bring a sufficient preservation arrangement. Although the law brought police measures like the fact that the ancient works can not be pulled down or changed negatively, it could not bring financial measures to reach these results in economic aspects. The obligations of restoration, interferences by the state and institutions of credit and aids did not take place in this law. Furthermore, its greatest deficiency was the lack of any sanctions. Another deficiency lays in the concept of preserving the historical atmosphere. It is not enough to preserve a mosque or a water-side residence by the Bosphorus, it is also required to preserve the surrounding harmony. If an apartment building is erected next to a historical mosque at the same level with its minaret, this would not mean preserving the historical work.” It is possible to state that the criticisms in the text are right.

By looking at the news, it is concluded that not unlicensed structures but neighbourhoods have been constructed in the small woods in the Bosphorus, that the silhouette of the strait has changed negatively and that overincreasing urban land values have caused rapid disappearance of historical works.

Besides the fact that the economic dimension of preservation mentioned in the Amsterdam Declaration, which is an international suggestion on preservation, in 1975 was criticized in terms of the responsibility and financial contribution of local administrations, it was not touched upon in the law in 1973; the law having entered into force only in 2004 enabled the collection of 10 % of the real estate taxes in the account of the Provincial Private Administration and the granting of it to Municipalities with the approval of the Governor with the purpose of preservation in an approach to constitute a solution to the economic dimension which is one of the most important deficiencies of preservation.

Some other news within the context of the negative effect of overincreasing urban land values on historical works is the wish to expand the shops in Kapalıçarşı (Covered Bazaar) in order to make more areas available. It is stated in the news that an area of 1 square meter costs 400 thousand liras in the bazaar and pointed out that the walls are being thinned so as to make more areas available and this creates static problems and even the danger of collapsing (7.5.1974 – Cumhuriyet).



It is observed that a number of restoration activities were carried out in 2004, when the law No. 5226 was enacted, and in the following year. These can be single buildings and structures constituting the urban fabric besides the archaeological ruins.

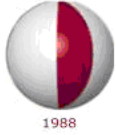
News and column articles of 2004 and 2005 can be grouped as the historical works excavated, smuggling of historical works, excavations, disappearance of historical works as a result of fire / pulling down and etc., the approaches of administrators towards the issue, evaluation of historical structures with secondary function, projects concerning historical foci, activities, decisions and restoration activities of institutions and organizations related to preservation and the activities taking place in historical places.

While the news concerning the preservation and restoration of historical environment in the means of press and broadcast in 1973-1974 approximately 30 years before were almost limited to smuggling of ancient works, it is perceived that the restoration activities were mentioned frequently in and after 2004 and even that their critical evaluations were made and that the faulty restorations were intervened. This angle of view to the issue was expanded more compared with the past and the sensitivity was increased.

- the reaction of art historians to the coming completion of the restoration of *Akdamar Church*, which is one of the symbols of Van, within six months (in a very express way), (5.15.2005 – Sabah)
- the fact that *Diyarbakır City Walls*, constituting the longest city wall and having a past of 1000 years, gained an ugly appearance due to wrong restoration (5.12.2004 – Sabah),
- the fact that *Doğubeyazıt İshak Paşa Palace* lost its historical characteristics due to the restorations lasting for four years (5.26.2004 – Sabah),
- the transformation of the traditional houses in *Akdeniz Kaleiçi* into new ferroconcrete structures with old appearances under the name of restoration (5.21.2004 – Akşam),
- the restorations at the *Courthouse of Muğla*, carried out by workmen, pulling out the hewnstones and throwing the doors and windows to the garbage (8.14.2005- Hürriyet),
- the fact that the historical pieces of earware decorated with opaque colored glazes and motifs that are characteristic of Turkish art were broken into pieces during the restoration of *Konya Sahip Ata Külliye* (complex of buildings adjacent to a mosque) (8.1-2.2005- Milliyet)

can be mentioned as several examples concerning the issue among the wrong restoration applications discussed.

Within the context of faulty interventions to historical structures, it is possible to state that the wall of *Yeni Valide Camisi İmarethanesi* (the soup kitchen of Yeni Valide Mosque) was pulled down and a door was built (8.31.2005- Milliyet); that the Edirne Municipality asphalted *historical bridges* (7.29.2004- Milliyet) ; that sewer networks passed at the center of historical works by İstanbul-Üsküdar Tube Passage Project .



A striking issue in this period is that news concerning restoration applications is at a rate which can not be underestimated. II. Beyazıt Hamamı (Beyazıt II Turkish Bath), İstanbul; Sümela Monastery, Trabzon; the Roman Fountain, Side; Yalvaç Devlethan Mosque; Knidos; Afyonkarahisar Castle; Kumkapı Ermeni Patrikhanesi (Kumkapı Armenian Patriarchate); the Project of Bursa Osmangazi Historical and Cultural Pedestrian Axis; the Western Stoa Faustina Gate in Agora, İzmir; Sultan Sancar Tomb; maintenance work of 44 historical fountains in Karabük Safranbolu; Ayasofya, İstanbul; Kosova I. Murat Türbesi (Tomb of Kosova Murat I); the historical mosques in Safranbolu (the restoration of five of 27 mosques); repair of reliefs in ruin site in Kahta, Nemrut-Adıyaman; Zeyrek Pantokrator Church, İstanbul; Ağlasun-Sagalassos ancient fountain, Burdur; the Historical Bursa City Walls; İzmir Abacıoğlu Han; Edirne Selimiye Mosque; Mehmet Ali Ağa Mansion, Datça; Hasip Paşa Water-side Residence, İstanbul; Kemeraltı historical bazaar in İzmir can be sampled among these. A striking issue about the structures in question is that the news about the restoration of Turkish works abroad besides various works in Anatolia were also mentioned.

Again in this period, it is also striking that European Union projects concerning restorations for preservation were carried out. The projects in İstanbul Fener-Balat, Aydın-Söke-Kemalpaşa District and Kula with the purpose of training employees for the education of restoration and application are efforts contributing multi-dimensionally within the contexts of the preservation of historical structures in the area and providing jobs for people besides spreading the awareness of historical environment.

Positive developments are observed in 2004-2005 within the context of archeological activities and it is understood that apart from support from the Ministry of Culture, the number of firms sponsoring the excavations increased. It is understood from some news that there were 208 excavations in Anatolia in 2005. It is known that apart from their contributions to the excavation works, the sponsor firms contribute also to restoration applications and thus they both realize a cultural service and advertise themselves and that they deduct their expenditures from the tax. Due to this opportunity, it is hoped that the supports in question will increase in the future and this will spread the restoration applications.

Among the news about the decisions concerning historical works, the decision of transforming a mansion in Ağın, Elazığ into a museum and a guest house, the fact that the enterprises began for the sale of Sait Halim Paşa Water-side Residence and Yorgo Zarifi Mansion for 49 years, the fact that Kaunos will be turned into an archeological park, the purchase of İzmir Karşıyaka Latife Hanım Mansion by Karşıyaka Municipality and the fact that the settlement will be like Prag by İstanbul Ayvansaray Project can be sampled (11.23.2004-Hürriyet; 7.28.2005 Milliyet; 9.25.2005- Milliyet).



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Urla'daki
Karantina
Merkezi
1865 yılında
kuruldu

1950 yılına
kadar
hastaları
tecrit için
kullanıldı

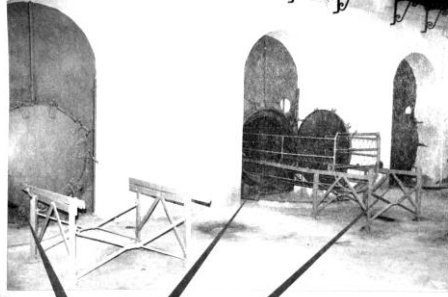
1980
yılında
boşaltıldı,
16 yıl kimse
ilgilenmedi

1996'da
bir kez
bakımı
yapıldı ve
boyandı

9 yıldır da
çürümeye
terkedildi.
Bekçisi
bile yok

140 YILLIK TARİH YOK EDİLMESİN..

1,5 asır önce özel olarak yapılan karantina dhazaları ile kurulan merkez kapalı tutulmak yerine müze haline getirilip, tarihe ışık tutması sağlanabilir



1800'ü yıllarda veba ve kolera salgınları üzerine belli noktalarda karantina bölgeleri oluşturuldu. Bunlardan biri Urla'daki Karantina Adası oldu...

GEMİLER İÇİN

İzmir'e gelen gemilerdeki insanlar adadaki Kiazomen Tahaffuzhanesi'nde karantina ve tecrit merkezi olarak dhazalarla denetim altına alınırdı. Hasta olanlar ise burada ölüyorlardı.

BİR TEK O KALDI

Dünyadaki karantina merkezlerinden tüm teçhizatı sağlam kalan tek yer burası... Tarihe tanıklık eden bu tesis, müze haline getirilip, yaşatılabilir. Öyle su anda kapama kilit vurulmuş durumda, kadereyle baş başa.

ÖZGE İPEKÇİOĞULLARI

YAZITÖR

• SAYFA 12'DE

Normal gysiler için
120 dereceye
buna kazanların
bu bölümünde
kazanlara
almaların
üstlerindeki
normal gysiler
denetimde
ediliyordu.

Gemideki eşyalar için
Karantinaya
alınan
gemilerdeki tüm
esya için
ortasındaki
bölümde
mikroplardan
arındırılıyordu.

İpekli kumaşlar için
İpekli eşyaların
kazanlarda
bulunması için
en sağda özel bir
bölümde
denetimde
işlenmeye
güyordu.



Karantina Adası'ndaki bu merkez 13 asır önce yapıldı. Karantina alanın en sonuna inenlerden birisi, gemilerdeki eşyaların denetim altına alınması için kullanılırdı. Yani her gün yeni...

Figure - 1



TARİHİN GÜN İŞİĞINA ÇIKMASINI SADECE YENİ ASIR GÖRÜNTÜLEDİ 1800 yıllık buluşma

Kazı Başkanı Ahmet Yaras, "Ortaya çıkarılan mozaikler, 8 yıldır yapılan kazıların en önemli buluşu" dedi

• ERDAL ÇARBOĞA (BERGAMA)

Eğecinin "Zeugma" s olarak bilinen Allianoi'deki sağlık yurdu binasında yapılan kazılarda, 9 metre derinlikte 1800 yıllık mozaik eserler

bulundu. Arkeologlar, mozaik eserlerin tarihi değerinin çok yüksek olduğunu söylediler. 1800 yıl sonra gün ışığı gören mozaik eserlerin günümüzde bulunmasını sadece Yeni Asır izledi.

Kazı ekibi 8 yıldır süren Allianoi kazılarında, dön büyük bir sevinç yaşadı. Yıllarca bölgedeki kumu temizleyen ekip, bu yıl gelikliklerini kazı alanının su ile doldurmuştu.

Sağlık alanı olduğu açıklanan 8 sütun bulunan bölgedeki su boşaltıldı. Tabana ulaşıldığında, yine kum vardı.

Bu kumlar da temizlendiyinde 1800 yıldır keşfedilmeyi bekleyen mozaik eserler ortaya çıktı. Kazı Başkanı Ahmet Yaras şunları söyledi:

Su ile tedavi

"Bu alanda MS 2. yüzyılda Roma döneminin altın çağında kurulmuş bir sağlık merkezi bulunuyor. Bergama'da psikoterapi yapıldığını, burada da su ile tedavi yapıldığını tespit ettik. 1800 yıl önce buraya Kozak'tan getirilen 8 adet granit sütun var. Tabanda geometrik bezemeli mozaik saplandı. Bunlar 2. yüzyıla ait kalıntılar. Bu mozaiklerin birleşimi yıl sonra gün ışığına çıkması bizi sevindiriyor ama içimiz buruk. Baraj inşaatı nedeniyle buraya sular altında kalırsa bu mozaikler yeniden sular altında kalacak ve bu kez bu 1800 yıl sonra yeniden gün ışığına çıkamayacak."

TARİHİN SAHİDİ

1 Sağlık alanı olduğu belirlenen bölüm su altında.
2 Su boşaltıldı ve tabandaki kumlar temizlendi.
3 İste muhtol son. Mozaiklerin gün ışığına çıkması sadece birkaç saat sürer.

Figure - 2

Some news in media



12 • 3 TEMMUZ 2005

OSMANLI DEVLETİ'NİN YAPTIRDIĞI TAHAFFUZHANE TARİHE İŞIK TUTUYOR

Çürütmeyin, müze yapın

✓ Urla'da Fransızlar'ın inşa ettiği, eski adı Kiazomen olan 140 senelik tarihi karantina merkezi yıllara meydan okuyor

✓ Ancak devlet burayı müze yapmak için hiçbir girişimde bulunmuyor. Tarih kapalı kapılar ardında çürüyüp gidiyor

ÖZGE İPEKÇİOĞULLARI

1800'ü yıllarda veba, kolera gibi salgın hastalıkların dünyanın dört bir ucuna Aya'dan yayılması üzerine ne kutlar arası geçişleri olduğu belli noktalarda karantina bölgeleri oluşturuldu. Aya'dan gelen mikroplar Avrupa'ya yayılması bu bölgeler sayesinde engellendi. Bu bölgelerden biri de İzmir'in Urla ilçesinde yer alan Karantina Adası. 1800'ü yıllarda başında birçok ülkede kurulan karantina bölgelerinde bugüne kadar tüm teçhizatıyla sağlam kalan tek yer Urla'da bulunan Kiazomen Tahaffuzhanesi.

KAPILARI KAPALI

5000 yıllık insanlık tarihinin izlerine rastlanan Karantina Adası, yıllara meydan okuyor. Çok fazla ziyaretçi olmayan adaya Urla Devlet Hastanesi'nde müzeye dönüştürme çalışmaları devam ediyor. Hedefte Sağlık Genel Müdürlüğü ile çalışanlar ve Sağlık Bakanlığı Urla Eğitim ve Dönüşüm Testleri'nde çalışanlar geliyor. Doğal güzelliği ve tropik ormanları andırın görüntüsüyle gözleri parlatan surların ardında devletin uluk dokümanlarıyla tuztuz cennet olabilir bir yapıya sahip. Tarihe kafa tutan bu tahaffuzhaneyi devlet koruma altına alıyor. Bu tarihi yeri gezmek isteyenler kapalı kapılarla karşılaşacak.

Bulacek hastalıkların kente yayılmasını engellemek için 1823'te Osmanlılar ilk karantina bölgesi kurdu. 1865 yılında da Kiazomen (Urla) Tahaffuzhanesi Osmanlılar tarafından Fransızlara yapıldı. Fransızlar bu adayı cesitli teçhizatlarla donatıp tahaffuzhane haline getirdi. Bu dönemde adanın karayla bağlantısı olması için Fransızlar

bir köprüyle yol yaptı. 1865'te yapılan ve 1950 yılına kadar işlevi sürdüren tahaffuzhane de sistem soyle işliyor. İlk önce karantina alanına gemi limanı yapılıyor. Gemideki insanlar ve eşyalar için üçü sistem devreye giriyor. İnsanlar eşyalar ve geminin denizdeki kısıtlı işlemleri başlıyor.

STERİLİZE KAZANI

Karantina Adası'na getirilen hacılar dolapta yer alan fişlerle üzerindeki eşyaları çıkartıp koyuyor. yine dolapta yer alan pestenallı tulum yakalı giyerler banyoları yapıyor. Hacıların kıyafetleri dolaplara koyuyor. 360 derece dönen bu dolaplar kıyafetleri yıkandıktan sonra duvarın diğer tarafında bulunan gereçlerle tarafsızdan alınıp sterilize kazanlarına koyuyor. Bu kazanlardan üç adet var. Birinde ipekli kumaşlar bulurken diğerinde edirler, diğerinde gemilerden indirilen eşyalar denetim için bir diğer tündeki kayalar

ADAYA KÖPRÜYLE BAĞLANDI

1800'ü yıllarda adanın karayla bağlantısının sağlanabilmesi için köprüden yol yapıldı. Cumhuriyetin kurulmasından sonra köprü kaldırıp yerine dikme yol yapıldı. Ancak köprü yolu yoldan hala kalıntılar denizin içine duruyor. Deniz seviyesi aşağıda köprü kalıntıları kayalar görülebiliyor.

HABER

OSMANLI DÖNEMİNDE NELER YAŞANDI?

Osmanlı Devleti'nin kayıtlarına geçen Kiazomen Tahaffuzhanesi'nde yaşananlar şöyle...
Yıl 1865: Karantina merkezi kuruldu. Dünyayı Fransızlar inşa etti.
Yıl 1864: Beyrut'ta yetmiş tükane ve teçhizat olmadık için, Yemen'den gelen askerler Kiazomen Tahaffuzhanesi'ne gönderilerek muayene edildi, karantina altına alındı. Bingazi'den Girit'e uğrayan Kayseri vapurunda kara humus hastalığı görüldüğü için yolcuların hepsi Kiazomen Tahaffuzhanesi'nde karantina altına alındı.

Yıl 1896: Peterburg'ta kolera hastalığı görüldüğü nedeniyle Finlandiya Körfezi'nden gelen gemiler Beyrut, Trablagar ve Kiazomen'de karantina altına alındı. İlaçlar yetmezince Beyrut ve Kiazomen Tahaffuzhaneleri için Marsilya'dan makina ve ilaçlar getirildi. Kolera salgını yoğun olarak görüldüğü Flemenk ve Belçika limanlarından gelen gemiler Beyrut, Trablagar ve Kiazomen Tahaffuzhaneleri'nde bes gün boyunca karantina altına alındı.

Yıl 1899: Derzade'de koyun nakleden Aleksandr Gemisi'nin Kale-i Sultaniye'den Kiazomen Tahaffuzhanesi'ne gönderilmesi üzerine, koyunların bir kısmı telef olan Osman Eyyup Aga, Osmanlı Devleti'ne sığıpette bulundu.

Yıl 1903: İzmir'de veba hastalığı yüzünden bir kısıtın olması üzerine limandan hareket etmecek olan tüm gemiler, Kiazomen'de karantina altına alınarak gemideki eşyalar denetimde edildi. - Kiazomen Tahaffuzhanesi'nde bes gün boyunca karantina altına alınan Musr Valisi Abbas Paşa'nın kızı Mehmet Ali Paşa'nın karantina bölgesinden çıkması doğrultusunda hükümet resmi işleri yapıp yayımlayacağı sorun haline gelmişti.

Yıl 1912: Kiazomen'de bir süre karantina altında tutulan Rusya hacılar, adaya olay çıkardı. Ancak yine de karantina siresi bütüne kadar hepsi gönderilmedi.

Yıl 1917: Kiazomen Hastanesi doktoru İken Berlin'de cinayete uğrayınca, Berlin Konsolosluğu'na sahte muhabirlik mektup gümrüğünden dolayı takibe alınan Nasser Rod, süpheli halinden dolayı hudut dışına çıkarıldı.

CUMHURİYET DÖNEMİNDE NELER OLDU?

Yıl 1950: Bu döneme kadar hastalara tecrit için kullanıldı.
Yıl 1980: Bina boşaltıldı. 16 yıl kimse ilgilenmedi.
Yıl 1998: Son kez bakımı yapıldı ve boyandı. Bu yıldan sonra çürümeye terk edildi, bekçisi bile yok.

Figure - 3



An issue, which attracted the attentions for a long period of time in media in this process was that the ancient city of Allianoi near Bergama was in danger of remaining under dam water. Another issue was the reaction to the project of construction of the ring road through Kordon in İzmir and the prevention of this especially by civil society. This objection was also reflected in the news entitled “Kordon yolu katliam olur” (Kordon road would be a massacre). Some other striking news is the article which was mentioned in press with the title of “Haydarpaşa Garı İstanbullulara kapatılıyor” (Haydarpaşa Station is closed to the people of İstanbul) and which stressed that the structure will be turned into the World Trade Center and closed to the people of İstanbul and it is necessary to prevent the project of privatization (9.19.2005-Cumhuriyet; 1.4.2004-Yeni Asır).

When the TV programs are observed, in parallel with the number of channels increased and the duration of programs extended, it is possible to say that there weren't any programs concerning the issue in the years 1973 and 1974 while it is observed that recently the awareness of preservation has been improved recently in many cultural programs and even that historical cities and structures are mostly preferred in domestic serials. This leads to the awareness of the towns and structures in question, the increase in interest and to the fact that the view to preservation is affected positively. Serials such as Asmalı Konak and Sıla have contributed the promotion and observation of striking historical foci of Anatolia such as Cappadocia and Mardin.

CONCLUSION

In conclusion, when the news and column articles concerning the preservation of historical environment and restoration within the process of approximately 30 years are compared within quantitative and qualitative contexts, a striking increase and variety attract attentions. Naturally, it is not possible to evaluate the issue independent from globalization and the developments occurring in any subjects in the world and in Turkey (education, technology, communication and etc.) in this process. The effect of the developments in question can not be denied within the context of its quantity and diversity concerning the issue. For example, while there was only one official TV channel in Turkey in 1973 and 1974, the fact that this number has now reached 29 national, 36 local and 44 channels broadcasting via satellite and that the newspapers were composed of eight pages in the past while today this number has increased to 20 to 30 pages are indications of these.

However, besides the general developments within universal and national context, it can be stated that the factors such as the fact that three new preservation laws and a number of principle decisions were enacted, the formation of Regional Councils thinking that considering the decisions concerning preservation not within central but within local context will shorten the process and will be healthier, the positive effect of successful restoration applications and the effects of international regulations with the characteristics of a suggestion for the issue of preservation bring the issue of preserving the historical environment on the agenda and play a role in this increase. Briefly, approximately within a process of thirty years, the crawling child became an adult, in other words, although slowly, the steps taken concerning preservation enabled progress in this field. The striking developments on the agenda of preservation observed recently, especially together with the law no. 5226 enacted in 2004 makes one think that although we are late for awakening the awareness, we may be more hopeful at least in terms of transferring the existing works to the future.



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SOME INFORMATION ABOUT NEAR EAST UNIVERSITY

Near East University was established in 1988 and since then has grown to become one of the fastest growing universities in the world setting itself the strategic goal of joining the “top 500 universities in the world”.

From 1988 until now, the University has managed to expand its physical infrastructure and improve its quality of education and scientific research to meet international standards. Near East University is a member of the European University Association, the International Association of Universities and the Federation of the Universities of the Islamic World. The University has over 3,000 staff, of which 1,000 are academic personnel. 17,000 students from 53 different countries are attending 14 faculties and more than 60 departments at the university. It has luxury halls of different sizes which in total cover an area of 350,000m² and have the capacity to hold a total of 5,000 people. There are also 14 dormitories with a capacity of 5,000 students, but the construction of new dormitories is also planned.

Near East University has adopted life long education as its main mission. Thus, we begin with our Kindergarten, Junior College and Secondary High School which have a total number of 2,000 students. The faculties and departments offering undergraduate and graduate degrees are as follows:

FACULTIES

1. Faculty of Architecture
 - Architecture
 - Interior Design
2. Faculty of Arts and Sciences
 - English Language & Literature
 - Mathematics
 - Turkish Language & Literature
 - Psychology
3. Faculty of Economics & Administrative Sciences
 - Banking & Finance
 - Business Administration
 - Computer Information Systems
 - Economics
 - European Union Relations
 - Human Resources Management
 - International Business
 - International Relations
 - Marketing
 - Political Sciences
 - Information & Records Management



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4. Faculty of Communication
 - Radio-Television-Cinema
 - Motion Picture Production
 - Journalism
 - Public Relations & Advertising
5. Atatürk Faculty of Education
 - English Language Teaching
 - Computer & Teaching Technologies
 - Pre-school Teaching
 - Elementary Teaching
 - Turkish Language Teaching
 - Guidance & Psychological Counseling
 - Human Resources
 - History Teaching
6. Faculty of Engineering
 - Civil Engineering
 - Computer Engineering
 - Electrical & Electronic Engineering
 - Mechanical Engineering
 - Biomedical Engineering
7. Faculty of Fine Art & Design
 - Graphic Design
 - Plastic Arts
8. Faculty of Maritime Studies
 - Department of Deck
 - Maritime Management
 - Marine Engineering
9. Faculty of Law
 - Law
10. Faculty of Performing Arts
 - Dramaturgy & Dramatic Authorship
 - Acting
11. Faculty of Pharmacy
 - Pharmacy



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12. Faculty of Dentistry

- Dentistry

13. Faculty of Health Sciences

- Nutrition and Dietetics
- Nursing

14. Faculty of Medicine

SCHOOLS

1.School of Physical Education & Sports

- Coaching Education
- Physical Education and Sports Teaching
- Sports Administration

2.School of Tourism & Hotel Management

- Tourism & Hotel Management

3. School of Maritime

- Deck
- Marine Engineering
- Maritime Management

INSTITUTES

- Institute of Education Sciences
- Institute of Sciences
- Institute of Social Sciences
- Institute of Health Sciences

With the opening of the NEU Grand Library in December 2005, the University has passed a new and critical milestone entering truly the information age. The Grand Library is fully computerized and linked to many major world libraries and research institutions throughout the world. The library has a collection of more than 600,000 printed materials and access to more than 110 million electronic articles. The library has recently been elected as the central library for the Turkic world and now serves universities of several different countries such as Azerbaijan, Kyrgyzstan and Turkmenistan. The library is open 24 hours a day serving not only the university but the whole community.



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The University has until now organized 14 International Conferences & Congresses and many local and regional conferences, seminars and panel discussions on a variety of subjects. Near East University believes that the role of the University is not merely to provide formal education but to establish close relations with the wider community. As such, it places special emphasis on strengthening and developing campus-community relations. The University set up a Lifelong Education Centre (YABEM) which provides a wide variety of adult education courses. The University also makes the use of its facilities for cultural, sports and recreation activities available to the public.

As you can see, NEU is one of the fastest growing Universities of the world. The last two years has been devoted towards Health Sciences. This year, we began education in the Faculty of Dentistry, Faculty of Pharmacy and Faculty of Health Sciences. Another important improvement that has been made in our university regarding Health is that in September 2008, education has begun in the Faculty of Medicine. The Faculty of Medicine Research Hospital will be opened in July 2009. The Hospital will have a capacity of 500 beds with a 4,5000m² closed area. The faculty will be giving full service but a special emphasis will be given to researches on Oncology and Cardiology.

NEU does not have boundaries in development. Therefore, a protocol was signed with IBM International in June 2007 for the construction of the NEU Innovation Centre. The building having a closed area of 8,500m² was opened last year. It consists of 3 sections: NEU-IBM Innovation Centre, NEU-IBM Advanced Research Centre and the NEU Technopark. The 'super computers' used in the building have a capacity of 12 trillion processes per second. The research areas consist of Global Warming, Earthquake Stimulation, Defense Research (military), Space Research, High Physical Energy, Nanotechnology and Biotechnology research and product design, Medical, Pharmaceutical, Microbiological, Health Science and Social Sciences. NEU Innovation Centre is unique with its facilities in Eastern Europe, Middle East, Central Asia and Northern Africa.



BRIEF INFORMATION ABOUT TURKISH REPUBLIC OF NORTHERN CYPRUS

History: Cyprus has been occupied successively by Assyrians, Babylonians, Egyptians, Persians, Romans, Lusignans and Venetians who have sought the island's wealth of minerals and timber since the 8th century BC. The Ottoman Empire conquered the island in 1571 and ruled it until the island was leased to the British Empire in 1878. In 1963, the Republic of Cyprus was established by the Turkish Cypriot and Greek Cypriots, based on political equality. The Turkish Cypriots were forcefully ejected from the state mechanism in 1963. Intercommunal clashes which broke out in 1960 continued until 1974. A military coup by Greece in 1974 aiming to annex the island to Greece was aborted by the intervention of Turkey, which was one of the Guarantor Countries. Following the Exchange of Populations Agreement in 1975, Turkish Cypriots moved to the north and Greek Cypriots moved to the south of the island. Consequently, the Turkish Cypriots established their own administration and in 1983, the Turkish Republic of Northern Cyprus was proclaimed.

Negotiations between the two sides under the auspices of the UN started in 1968, with the aim of finding a comprehensive settlement in Cyprus. The latest negotiation process came to an end when the compromise plan, Annan Plan, prepared by the then UN Secretary General Kofi Annan, was overwhelmingly rejected by the Greek Cypriot people. During the referendum held on 24 April 2004, whilst 65% of the Turkish Cypriots voted "Yes", 75% of the Greek Cypriots voted against the plan; thus, eliminating the possibility of establishing a new partnership republic. Despite their obstructionist attitude, the Greek Cypriot administration unilaterally entered the European Union under the usurped title of the "Republic of Cyprus", on 1 May 2004. The then UN Secretary General Kofi Annan, expressed his regret and noted that *"he hoped ways would be found to ease the plight in which the (Turkish Cypriot) people find themselves through no fault of their own"* (24 April 2004). In his report to the Security Council, he called upon the international community to *"cooperate both bi-laterally and in international bodies to eliminate unnecessary restrictions and barriers that have been the effect of isolating the Turkish Cypriots and impeding their development"* (S/2004/437). The current UN Secretary General Ban Ki-moon also referred to the economic and social isolation of the Turkish Cypriot people in his report to the UN Peacekeeping Force in Cyprus (UNFICYP) in December 2007, pointing out that promoting the development of the Turkish Cypriot people would make the reunification of the island "occur in as seamless a manner as possible." Observing the injustice against the Turkish Cypriots, who have been experiencing all kinds of inhuman restrictions for years, the EU also expressed its will to enhance the economic development of Turkish Cypriots through an aid package. The EU Commission adopted a proposal, which had foreseen the transfer of 259 million Euros financial aid. However, the Turkish Cypriots have not been effectively benefiting from the EU aid due to Greek Cypriot administrations' pressures.

After the Presidential elections in February 2008 on the Greek Cypriot side, President Mehmet Ali Talat has reiterated once again his readiness for a new process of full-fledge negotiations and expressed his sincerity towards a solution.



**International Conference on Environment: Survival and Sustainability 19-24 February 2007
Near East University, Nicosia-Northern Cyprus**

Places to visit: In Lefkoşa (capital): Selimiye Mosque, Mevlevi Museum, Sultan Mahmut Library, Dervish Pasha Mansion and Lapidary Museum. In Gazimağusa: Antique Ruins of Salamis, Kantara Castle, Othello Castle, Lala Mustafa Paşa Mosque, Canbolat Museum, Ruins of Ayios Philion, St. Barnabas Icon Museum and Apostolos Andreas Monastery. In Girne: Kyrenia Castle, Bellapais Abbey, St. Hilarion Castle and Buffavento Castle, and in Güzelyurt: Soli Ruins, St. Mamas Monastery and Vouni Palace.

Nature: North Cyprus hosts over 1,600 plant species (22 are endemic), 350 species of birds (7 are endemic), and there are 26 different species of reptiles and amphibians. Every year, 250 different kinds of birds, around 100 million, migrating from Europe to Egypt pass through North Cyprus. The country also became home to some 50 different varieties of butterflies. Visitors are amazed to see that there are 30 different varieties of orchids on the island, 7 of them unique to North Cyprus. Rich underwater plant life and 200 different types of fish are making the blue Mediterranean waters attractive for sea lovers. 30% of the turtles in the Mediterranean, amongst them *Carretta Caretta*, *Chelania Mydas* (Green Turtle) and *Dermachelys Coriacea*, come to the coasts of North Cyprus for breeding.

Life-style, Culture: Turkish Cypriots are well-educated, social and hospitable people. North Cyprus is popular with its handicrafts, cuisine, traditional music and folk dancing. The Turkish Cypriot Cuisine is famous for its kebab dishes and starters called “mezes”. Daily fresh fish, meat, vegetables and fruit used in the Turkish Cypriot cuisine make the dishes both tasty and healthy. Local alcoholic drinks include raki, brandy and red and white wine. Baklava, kadayıf and katmer are deserts favoured by most and Turkish Coffee is a must at the end of every dinner. The cultural and art facilities make the country attractive both for the tourists and foreign students. During the hot summer months, people prefer to relax by the sea whereas during the fall season, people go on picnics and long walks in the mountains and countryside. Indoor activities like exhibitions, cinemas, theatres and concerts are always available.

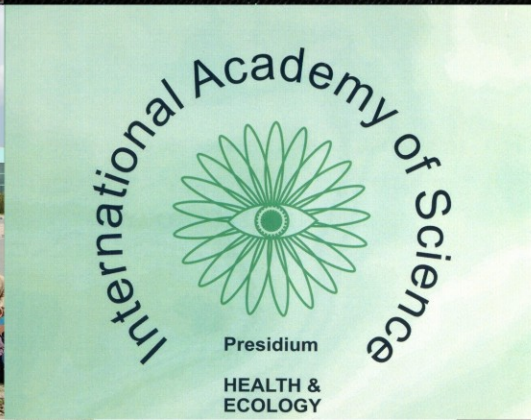
Electricity: 240 volts A/C. 50 Hz.

Traffic: Driving is on the left and international traffic and road signs are used. Maximum speed on highways is 100 km/hr. Vehicles entering North Cyprus must be insured upon arrival. Please refer to the Turkish Embassy or TRNC Representative Office in your country to check visa requirements.

Climate: North Cyprus enjoys a Mediterranean climate with long, dry summers and short wet winters. The average annual temperature is 19°C. The weather in winter is very mild with temperatures ranging between 9°C-12°C. Average annual rainfall is 500mm.

Emergency telephone numbers: Fire 199, Police 155, First Aid 112







NEAR EAST UNIVERSITY

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