PROCEEDINGS

Edited by Prof.Dr. Hüseyin Gökçekuş

VOLUME 1

International Conference on
Environment: Survival and Sustainability

19-24 February 2007 Nicosia-Turkish Republic of Northern Cyprus
Organized by ***NEAR EAST UNIVERSITY***

Published By: EDUCATIONAL FOUNDATION OF NEAR EAST UNIVERSITY
Near East University, Lefkoşa, Turkish Republic of Northern Cyprus
Tel: +90 392 223 64 64
Fax: +90 392 223 64 61
e-mail: info@neu.edu.tr
web: www.neu.edu.tr

Citation: **Gökçekuş, H., 2009 (Editor) Proceedings of the International Conference on Environment: Survival and Sustainability.** Nicosia (Lefkoşa), Turkish Republic of Northern Cyprus: Educational Foundation of Near East University. 10 volumes, LXXVI, 5498, XIV pages.

ISBN: Volume 1: 978-975-8359-53-0

Printed by: Near East University
Tel: +90 392 223 64 64
Fax: +90 392 223 64 61

Editor: Prof. Dr. Hüseyin GÖKÇEKUŞ
Near East University
Lefkoşa,
Turkish Republic of Northern Cyprus
ghuseyin@neu.edu.tr,
gokcekushuseyin@gmail.com
Tel/Fax: 00 90 392 223 54 27

CONTENTS

Pages

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

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
Lefkoşa-TRNC

ORGANIZING COMMITTEE MEMBERS

Honorary President

Dr. Suat İ. GÜNSEL, Founding Rector of the Near East University

President

Prof. Dr. Hüseyin GÖKÇEKUŞ, Vice Rector of the Near East University

Members

Prof. Dr. Ümit HASSAN, Rector of the Near East University
Prof. Dr. Aysel YONTAR
Dr. Hatice GÖKÇEKUŞ (M.D.)
Asst. Prof. Dr. Umut TÜRKER
Asst. Prof. Dr. Mesut YALVAÇ
Asst. Prof. Dr. Rifat REŞATOĞLU
Asst. Prof. Dr. Mehmet OKCAN
Asst. Prof. Dr. Dudu ÖZKUM
Asst. Prof. Dr. Salih GÜCEL
İrfan GÜNSEL
Gürdal HÜDAOĞLU
Havva ARSLANGAZİ
Tümer GARİP
Alp ÖZERK
Ahmet SAVAŞAN
Nesrin MENEMENCİ
Şakir ALEMDAR
Zehra BAŞARAN
Temel RIZZA
Emel TOZLU ASLAN
Şifa ABİK

INTERNATIONAL ADVISORY BOARD MEMBERS

A. I., OLAYINKA	Nigeria
A., JAGADEESH	India
Abdul, KHAKEE	Germany
Abdullahi Elmi, MOHAMED	Somalia
Agustin Gonzales Fontes de, ALBORNOZ	Spain
Ajmal, KHAN	Pakistan
Aleh, RODZKIN	Belarus
Alex, CHENG	USA
Ayman Abou, HADID	Egypt
Ayşe, DÖNMEZER	Turkey
Aziz, ERTUNÇ	Turkey
Belay, TEGENE	Ethiopya
Çağatay, GÜLER	Turkey
Dana, KOLEVSKA	Macedonia
Ed, BOLES	Belize
Elizabeth, GONZALEZ	Uruguay
Elizabeth, THOMAS-HOPE	Jamaica
Ersi, ABACI KALFOĞLU	Turkey
Filiz, DILEK	Turkey
Furkat, KHASSANOV	Uzbekistan
Gaudelia A., REYES	Philippines
George, CONSTANTINOU	Cyprus
George, PETRIDES	Cyprus
Günay, KOCASOY	Turkey
Guntis, BRUMELIS	Latvia
Halime, PAKSOY	Turkey
Hallvard, ØDEGAARD	Norway

Hasan, **ERTEN**	Turkey
Hunay, **EVLIYA**	Turkey
Ibrahim Abdel Gelil Said, **ABDULA**	Bahrain
İbrahim S., **ALNAIMI**	Qatar
İrfan, **GÜNEY**	Turkey
Jaco, **VANGRONSVELD**	Belgium
Joe, LEWIS	Namibia
John, SAKA	Malawi
Lyoussi, **BADIAA**	Morocco
M. Nasir, SHAMSUDIN	Malaysia
Mahmut Parlak, **TUNA**	Turkey
Mannar, FAYYAD	Jordan
Manuel Benito, **CRESPO**	Spain
Marcel, **STIVE**	Netherland
Margaret, ZIMBA	Zimbabwe
Mark, BYNOE	Guyana
Mohsen, HOSSEINI	Iran
Moneef R., **ZOU'BI**	Jordan
Mutasem, EL-FADEL	Lebanon
Neşet, KILINÇER	Turkey
Nükhet, **TURGUT**	Turkey
Orhan, ALTAN	Turkey
Peyman, YALÇIN	Turkey
Qasem Abdul, **JABER**	Palestine
Ramzi, SANSUR	Palestine
Reinhold, STEINACKER	Austria
Renee, RICHER	Armenia
Richard, MOLES	Ireland
Şafak, **URAL**	Turkey
Selim, **KAPUR**	Turkey

Serpil, OPPERMAN	Turkey
Seval, SÖZEN	Turkey
Sevgi, SARYAL	Turkey
Skender, OSMANI	Albania
Songül A., VAIZOĞLU	Turkey
Tarzan, LEGOVIC	Croitia
Tetsuo, YUHARA	Japan
Tuluhan, YILMAZ	Turkey
Turan, ÖZTURAN	Turkey
Ümit, ERDEM	Turkey
Valentina, YANKO-HOMBACH	Canada
Waleed Khalil, ZUBARI	Bahrain
Yigal, RONEN	Israel
Zekai, ŞEN	Turkey
Zohra Ben, LAKHDAR	Tunisia

SCIENTIFIC COMMITTEE MEMBERS

Ferid, MURAD - Nobel Laureate	USA
Richard R., **ERNST** - Nobel Laureate	Switzerland
Yuan T., **LEE** - Nobel Laureate	Taiwan
A.H., **ZAKRI**	Malaysia
Ahmad, MARRAKCHI	Tunisia
Alexey Arkady, **VOINOV**	USA
Andrea E., RIZZOLI	Switzerland
Andrew, BROOKES	Australia
Anne, **BUTTIMER**	Ireland
Anthony J., **JAKEMAN**	Australia
Anwar, NASIM	Pakistan
Barry W., **WILSON**	USA
Bjarne Bruun, JENSEN	Denmark
Branimir, **JOVANCICEVIC**	Serbia and Montenegro
Charles N., ALPERS	USA
Dan C.C., **GALERIU**	Romania
David A., **STAH**	USA
Derin, **ORHON**	Turkey
Elchin, KHALILOV	Azerbaijan
Eric, **JOHNSON**	Switzerland
Esteban G., **JOBBAGY**	Argentina
Fabian M., JAKSIC	Chile
Farhat M., ALI	Pakistan
Frederick.I.B., KAYANJA	Uganda
Gabriele, **VOIGT**	Austria
Galip, AKAY	UK
G-C., **FANG**	Taiwan

Geoff, BERTRAM	New Zealand
George G., LUNT	UK
Gerald, **LALOR**	Jamaica
Germano, **MWABU**	Kenya
Giovanni, BARROCU	Italy
Girja K., SHUKLA	India
Gopal B., **THAPA**	Thailand
Hanwant B., **SINGH**	USA
Hartmut, **FRANK**	Germany
Heila, **LOTZ-SISITKA**	South Africa
Helen, SCHNEIDER	South Africa
Hillel S., **KOREN**	USA
Hiromi, **YAMASHITA**	UK
Holmes, **ROLSTON**	USA
Hruska, JAKUB	Chezch Republic
Irena, **TWARDOWSKA**	Poland
Isfaq, AHMAD	Pakistan
J.F.Santos, **OLIVEIRA**	Portugal
James, DEVILLERS	France
Jaroslav, BOHAC	Chezch Republic
Jennifer, **BROWN**	New Zealand
Jianping, **WU**	China
Jim C., BRIDEN	UK
John, DAISH	New Zealand
John, GREGORY	UK
John, HOSKINS	U.K
Judith T., **ZELIKOFF**	USA
Jyrki, **LIESIVUORI**	Finland
Kaku, NOKOE	Ghana
Kenneth N., **TIMMIS**	Germany

Kristine, WALRAEVENS	Belgium
Kyaw Tha, PAW U	USA
Kyoung-Woong, KIM	Korea
Luc, HENS	Belgium
M. Shamsher, ALI	Bangladesh
Mamdouh, NOUH	UAE
Manzoor, QADIR	Syria
Marcel, ARNOULD	France
Marcial, BLONDET	Peru
Martha C., MONROE	USA
Mary, SEELY	Namibia
Mehmet, ERGIN	Turkey
Michael, WILHELM	Germany
Münür, ÖZTÜRK	Turkey
Muthana, SHANSHAL	Iraq
Naim H., AFGAN	Portugal
Nicholas, MASCIE-TAYLOR	UK
Nicholas, ORNSTON	USA
Norhayati Mohd, TAHIR	Malaysia
Pall, HERSTEINSSON	Iceland
Patricia, MAURICE	UK
Paul W., JOWITT	UK
Paulo B., LOURENCO	Portugal
Peter, BRIMBLECOMBE	UK
Peter, KRUMBIEGEL	Germany
Peter, NOVAK	Slovenia
Philip E., LAMOREAUX	USA
Philip M., FEARNSIDE	Brazil
Ravi, JAIN	Australia
Richard, ROBINS	France

Robert J., LETCHER	Canada
Robert, GIFFORD	Canada
Roberto, DANOVARO	Italy
Saffa B., RIFFAT	UK
Sam, KACEW	Canada
Sandor, KEREKES	Hungary
Scott, SLOVIC	USA
Sevket, DURUCAN	UK
Shafiqul I., BHUIYAN	Bangladesh
Shahamat U., KHAN	USA
Shian-chee, WU	Taiwan
Siaka, SIDIBE	Mali
Stephen P., MCCARTHY	USA
Tarzan, LEGOVIC	Croatia
Tomasz, ZYLICZ	Poland
Ulric, ROTT	Germany
Vedat, DOYURAN	Turkey
Victor G., PRIETO	USA
Walid A., ABDERRAHMAN	Saudi Arabia
Walter, KOFLER	Austria
William.J., MANNING	USA
Wiranto, ARISMUNANDAR	Indonesia
Zhihong, XU	Australia

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. Günsel
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 Gökçekuş
Vice Rector of the Near East University

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.

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.

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.

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.

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.

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.

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.

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.

Asım VEHBI
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 loses from human economic activities were forest cover 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 loose biodiversity in the environment. It is stated that every year we are losing at least 50 different species of live hood 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 $6^{o}C$ 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

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.

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.

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 academician 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

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.

Türkekul KURTTEKIN
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

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.

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 came 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.

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.

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.

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.

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.

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.

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

LIST OF PAPERS AND POSTERS

VOLUME 1

MT-1: BUSINESS AND ENVIRONMENT : REDEFINING INTERESTS

VOLUME 2

MT-2: CONSERVATION AND MANAGEMENT OF BIODIVERSITY

VOLUME 3

MT-3: CULTURAL HERITAGE AND ENVIRONMENTAL FACTORS

VOLUME 4

MT-4: ECONOMICS, DEVELOPMENT AND SUSTAINABILITY

VOLUME 5

MT-5: ENERGY AND DEVELOPMENT: NEW AND RENEWABLE ENERGY

MT-6: ENVIRONMENT AND HEALTH

VOLUME 6

MT-7: ENVIRONMENTAL AWARENESS, EDUCATION, AND LIFELONG LEARNING

MT-8: ENVIRONMENTAL KNOWLEDGE AND INFORMATION SYSTEMS

MT-9: ENVIRONMENTAL LAW AND ETHICS

MT-10: ENVIRONMENTAL ORGANIZATIONS: ROLES, PROBLEMS AND PROSPECTS

VOLUME 7

MT-11: ENVIRONMENTAL SCIENCE AND TECHNOLOGY

MT-12:GLOBAL WARMING: HOW MUCH OF A THREAT?

VOLUME 8

MT 13 -GREEN FACTOR IN POLITICS

MT-14: INTEGRATED WATER RESOURCES MANAGEMENT

VOLUME 9

MT-15: INTERNATIONAL RELATIONS AND ENVIRONMENTAL ISSUES

MT-16: LITERATURE AND ENVIRONMENTAL AWARENESS

MT-17: NATURAL AND MAN-MADE DISASTERS: EMERGING LINK AND CHALLENGES

MT-18: PESTICIDES IN THE ENVIRONMENT AND FOOD COMMODITIES

MT-19: THE ROLE OF MEDIA : PROBLEMS AND CHALLENGES

VOLUME 10

MT-20: SEAS, ECOLOGICAL BALANCE, AND SUSTAINABLE ENVIRONMENT

MT-21: SOCIAL AND PSYCHOLOGICAL DIMENSIONS OF ENVIRONMENTAL ISSUES

PROCEEDINGS

Edited by Prof.Dr. Hüseyin Gökçekuş

Papers & Posters

VOLUME 1

International Conference on
Environment: Survival and Sustainability *19-24 February 2007 Nicosia-Turkish Republic of Northern Cyprus*
Organized by ***NEAR EAST UNIVERSITY***

PROCEEDINGS

Edited by Prof.Dr. Hüseyin Gökçekuş

MT-1: Business and Environment : Redefining Interests

VOLUME 1

International Conference on Environment: Survival and Sustainability
19-24 February 2007 Nicosia-Turkish Republic of Northern Cyprus
Organized by NEAR EAST UNIVERSITY

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

SUSTAINABLE INDUSTRIAL GROWTH: STRATEGIES AND IMPLEMENTATION

Jurgis Kazimieras STANISKIS
Kaunas University of Technology, LITHUANIA
jurgis.staniskis@ktu.lt

Most of environmental problems are linked to industrial development, and business conditions are becoming more and more complicated due to increasing environmental concerns. Sustainable Development - "to meet the needs of the present without compromising the ability of future generations to meet their own needs" is the commonly used definition which was set by the Brundland Commission. Sustainable industrial development could be defined as a process of adopting business strategies and activities to meet the needs of the enterprise and its stakeholders today, while protecting, sustaining and enhancing the human and natural resources that will be needed in the future.
Paper deals with the experience and results of the implementation of sustainability measures in more than 150 Lithuanian companies and in some enterprises of East African, South East Asian and Central American countries. Despite attractive economics and significant reductions in environmental impact, the wide – spread adoption of preventive environmental measures in many countries (especially developing) still remains a problem. The paper is addressing the barriers for the adoption of sustainable development strategies at the level of individual enterprises and most often categorised as "conceptual", "organizational", "economic" and technical. It makes, however, sense to subdivide the economic constrains in economic and financing constrains, and to add constrains related to the environmental policy.

***Keywords**: Cleaner Production, sustainable industrial development, environmental management, investments, sustainable economics*

Introduction

The role of industry in the process of sustainable development is obvious. It relates to changes in production processes and products aimed at reducing the impact on the environment in the entire life cycle perspective and at improving the environmental and social performance of enterprises. To ensure sustainable economic growth, systematic application of the following tools is needed [1]:

- cleaner production (CP),
- environmental and integrated management systems,
- product – related measures, for instance life cycle assessment, eco – design, integrated product policy, extended producer responsibility,
- sustainability reporting.

Over the last 15 years a great variety of different programmes in have been launched to facilitate the uptake of sustainability measures in Lithuanian industry. Many programmes have had, and continue to have, a strong technical assistance component that assists businesses with the identification, evaluation and implementation of preventive options appropriate for their operations. Moreover, enabling policy frameworks have been set up, for instance, on the basis of mandatory planning, voluntary agreements, industry environmental management codes or financial incentives.

1. Concept of sustainable industrial development

Practical application of sustainable development principles in activities of industrial enterprises is becoming an important aspect of business competition. From other side, sustainable development opens new business opportunities, e.g. development of more environmentally friendly products and processes. Additionally, application of preventive environmental management measures helps to increase productivity, to reduce use of natural resources and associated costs, to reduce costs for waste management and pollution control, to reduce risks, etc, i.e. to improve environmental, economic and social performance that in turn provides competitive advantage.
Sustainable industrial development could be defined as a process of adopting business strategies and activities to meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future.

2. Overview of progress in implementing sustainable industrial development measures in Lithuanian industry

Number of industrial enterprises in Lithuania implementing sustainable industrial development measures is increasing. However, most of implemented measures are in the areas of cleaner production and environmental/ quality management systems. In other areas such as product oriented measures of sustainable industrial development and sustainability reporting; activities are in the phase of initiation.

Cleaner production

Institute of Environmental Engineering (APINI), Kaunas University of Technology initiated implementation of cleaner production in Lithuania and is the main institution in the country working in this area. These activities have been actively supported by the Lithuanian Confederation of Industrialists. Most of CP programmes in Lithuania have been developed and implemented with support from donors and international organisations. Several countries, particularly USA, Norway, Denmark, Sweden, the Netherlands were supporting activities in this field. All programmes pursued similar goals but with different approaches. Experience from Lithuania where different donors/organisations were active shows the complementarity of these approaches for introducing preventive environmental practices into the industrial sector.

In 1992-2005, with support provided by different donors and in co-operation with different foreign and local partners APINI supported more than 100 Lithuanian companies to implement cleaner production projects. Most active in this regards were textile and food industry. Cleaner production measures mainly have been used to reduce energy consumption and to reduce water consumption. In terms of innovation type, most of investments have been used in process optimization and technology change. Detailed information about CP innovations in selected industry sectors is presented in the Table 1 [3].

Table 1: Implementation of CP in Lithuanian Industry

Industry sector	Number of enterprises	Number of CP options analysed	Number of implemented CP measures	CP investments, EUR	Savings from implemented CP measures, EUR/ year
Textile industry	14	42	39	2 734 000	2 474 000
Food industry	13	27	25	2 027 000	1 365 000
Chemical industry	6	15	14	435 000	493 000
Machinery production	5	5	5	1 033 000	389 000
Production of radio, TV and telecommunication equipment	2	6	6	1 478 000	613 000
Furniture production	6	10	10	1 030 000	421 000
Wood industry	3	6	6	1 431 000	1 067 000

Table 2: Results from implemented CP innovations

Results from implemented CP innovations are summarised in the table 2.

Number of companies	126
Number of implemented CP innovations	211
Environmental results (yearly):	
El. Energy consumption reduced	27 584 000 kWh
Heat Energy consumption reduced	60 518 000 kWh
Waste amount reduced	86 700 t
Chemicals consumption reduced	850 t
Air emission reduced	79 500 t
Drinking water consumption reduced	297 500 m^3
Diesel consumption reduced	387 000 l
Natural gas consumption reduced	5 883 000 m^3
Fuel consumption reduced	656 800 t
Wastewater amount reduced	622 500 m^3
Industrial water consumption reduced	468 900 m^3
Economic profit:	
Total investment in CP innovations	16 529 000 EUR
Yearly savings from CP innovations	9 605 000 EUR

Number of companies 126
Number of implemented CP innovations 211
Environmental results (yearly):
El. Energy consumption reduced 27 584 000 kWh
Heat Energy consumption reduced 60 518 000 kWh
Waste amount reduced 86 700 t
Chemicals consumption reduced 850 t
Air emission reduced 79 500 t
Drinking water consumption reduced 297 500 m3
Diesel consumption reduced 387 000 l
Natural gas consumption reduced 5 883 000 m3
Fuel consumption reduced 656 800 t
Wastewater amount reduced 622 500 m3
Industrial water consumption reduced 468 900 m3
Economic profit:
Total investment in CP innovations 16 529 000 EUR
Yearly savings from CP innovations 9 605 000 EUR

Environmental and integrated management systems

Experience from implemented cleaner production programmes/ projects showed that it is difficult to ensure follow-up of CP activities on company level after the project end. Therefore, decision has been made to integrate CP and EMS and to start implementation of preventive environmental management systems.

To build capacity in the area of environmental management systems, Institute of Environmental Engineering, in co-operation with Norwegian company Det Norske Veritas and Ministry of Environment of Lithuania implemented a project, which was financed by the Norwegian government. During this project, 19 environmental auditors have been trained.

In June 2006, there were 191 companies in Lithuania that implemented certified environmental management systems in accordance to international standard ISO 14001. To date, there are no companies in Lithuania registered in accordance to EMAS.
Implementation of quality management systems in Lithuania started earlier and in June 2006, there were 657 companies that implemented certified quality management systems in accordance to ISO 9000 series.
Process of sustainable industrial development requires implementation of integrated management systems. Increasing number of Lithuanian companies implement integrated quality and environmental management systems. Implementation of health and safety management systems had not started in Lithuanian companies yet.
Unfortunately, data is not available to demonstrate effectiveness of implemented management systems in improving performance of companies. However, it should be stressed that not in all cases companies manage to implement effective management systems that lead to improved performance. In some cases, companies implement management systems that formally satisfy all formal requirements of the standards and use certificates only for improving their market position. Nevertheless, implementation of environmental and quality management systems has not arguably contributed to the process of sustainable industrial development in the country.

Product oriented measures of sustainable industrial development and sustainability reporting

To initiate activities in the area of sustainability reporting, the Institute of Environmental Engineering jointly with Norwegian partners (Norwegian Institute of Technology and Trondheim University) implemented a project "Environmental Management and Reporting" in Klaipeda region. The focus of the project was on development of sustainability reports by companies based on environmental objectives set by Klaipeda municipality. The next step after more companies in the region will publish their reports would be development of a sustainability report for the whole community. Such report could be a good source of information for improving strategic planning of the municipality as well as for individual companies as a standard set of performance indicators will be used that will allow benchmarking of companies' performance.
In the area of product oriented measures, APINI and the Swedish Environmental Research Institute, IVL completed a project "Green Products Development". The key objective of this project to take first steps in building national capacity that would allow implementation of product oriented measures of sustainable industrial development.

3. CP investment project development under APINI – NEFCO methodology

As usual, CP success in Lithuania is measured by the number of generated options or developed projects/case studies. In 1996 – 2001, 32 % of totally generated CP proposals were implemented during the Lithuanian – Norwegian CP programs or in short run after they were finished. Representatives of Lithuanian companies stressed that the major constrain to implement more CP projects (especially middle and high investment needed) was the lack of financing sources. Implementation of good housekeeping proposals, which form around 20 % of totally generated proposals, was fully financed by companies' own sources, for the other types of the projects companies needed the financial support from the outside (funds, banks, etc.)

In 1998, under APINI initiative Nordic Environment Finance Corporation (NEFCO) established a special Revolving Facility for Baltic States and North West Russia. The Facility's conditions are very attractive for Lithuanian companies [4]:

- max loan amount - 350 000 EUR (until 2004 the amount was 200 000 EUR),
- interest rate - 2,2 % (until 2004 the rate was 4%),
- the loan should be repaid during CP project pay-back period (max 4 years),
- collateral is 150 % of loan amount and should be a movable property.

The Facility has considerable catalytic effects in Lithuania by demonstrating to other financiers and enterprises that financing of priority cleaner production investments yield environmental and economical benefits. The main objective of the facility is to finance on favourable terms implementation of high-priority CP innovations with rapid payback that yield environmental and economical benefits ("win-win projects"). The innovations should be commercially viable with an identifiable and secure stream of earnings to be used to repay the loan. The basis for providing a loan is a cash flow of CP investment and ability of the enterprise to repay the loan over agreed period.

Technical appraisal of the project is focussed on:

- inter-alia, ensuring that the project is technically feasible, technical solution is cost effective, and that no experimental technologies are being applied;
- confirming that the environmental and economic benefits are achievable;
- establishing that the time scales are reasonable; and confirming that the procurement approach is acceptable and that the price estimates are realistic.

In terms of CP investment financing, APINI experts play a crucial role in CP project identification, evaluation, implementation and reporting [5]:

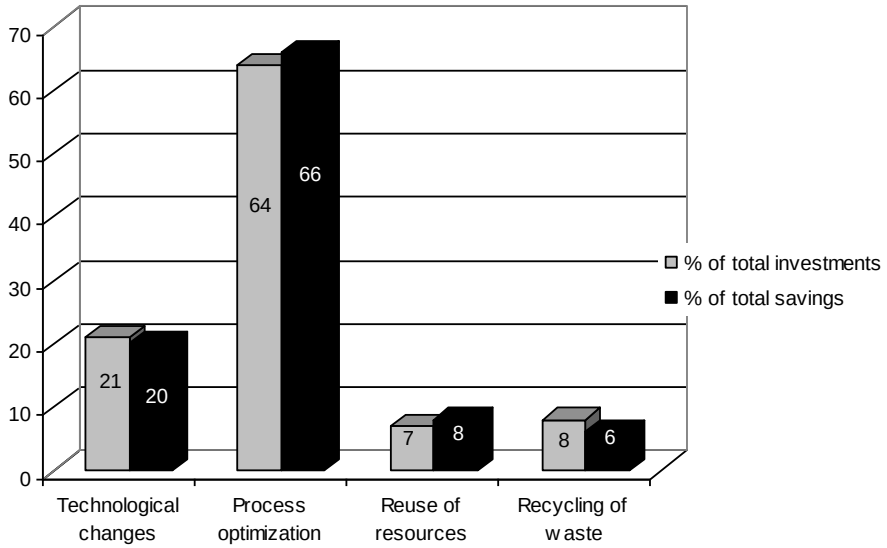
- prepare a loan application on behalf of the applicant, including assistance in calculation of costs savings and environmental benefits;
- assist financing institution in communication with the applicant and preparation of loan documentation, project description and reporting requirements;
- prepare of project progress and completion reports to be presented as a part of borrower's disbursement request;
- assist in project monitoring and supervision including supervision of procurement and project implementation progress as compare to budgets and implementation plan as well as project objectives.

For each CP investment project, supervision and monitoring plan is prepared as a part of the loan application. Each company has to provide APINI experts with a possibility to inspect goods, sites, factories, installations and construction sites included in the investment project, and to supervise project implementation and any related documentation. Financial and physical performance indicators are specified in the loan agreements. For each project, realised savings are verified and compared with the expected savings.

Fig. 1 shows that the methodology developed by APINI experts ensures companies that all relevant, significant costs are considered when making business decisions. Even if in some cases particular environmental savings were not achieved, the total project impact and payback period do not change. Therefore the Revolving Facility addresses the needs to enhance financing of CP projects that otherwise would not have been implemented with a high leverage for donors and an effective use of scarce resources. The Facility enables financing of smaller investment projects in the target countries.

According APINI methodology, a standardised reporting format is provided with focus on savings in energy use, water use, use of chemicals, etc. The environmental effects of each project are verified. This verification should document reduction in emissions and wastes and reduction in inputs (water, energy, chemicals, etc.). The mentioned standardised format ensured management of all CP innovations data in a special data base, which was created by APINI experts. Data in the database is continuously updated.

Fig. 1. Analysis of economic results of CP investment projects implemented with NEFCO loans



It can be concluded that CP investment project developed and implemented according the methodology :

- increases profitability, lowers production costs;
- provides a rapid return on any capital or operating investments required;
- leads to the more efficient use of energy, natural resources and raw materials;
- increases staff motivation through reduced worker risks;
- reduces the risk of environmental accidents;
- significantly reduces / avoids regulatory compliance costs.

Therefore, CP success in Lithuania can be measured by environmental and economic benefits. Below the real data from APINI CP data base is presented:
Number of companies: 35
Number of implemented CP innovations provided with NEFCO loan 42
Environmental savings (yearly):
El. Energy consumption reduced 5490664 kWh
Heat Energy consumption reduced 12046210 kWh
Waste amount reduced 17260 t
Chemicals consumption reduced 168 t
Air emission reduced 15824 t
Potable water consumption reduced 59214 m3
Diesel consumption reduced 76970 l
Natural gas consumption reduced 1171036 m3

Fuel consumption reduced 130736 t
Wastewater amount reduced 123922 m3
Wastewater pollution load reduced 88.5 t
Industrial water consumption reduced 93320 m3
Oil consumption reduced 18 t
Raw material consumption reduced 345 t
Economical profit:
Total investment in CP innovations 3 289 922 EUR
Yearly savings from CP innovations 1 911 920 EUR
In the framework of UNEP and UNIDO projects, Lithuanian experience was transferred to several countries in South East Africa, Central America and Asia.

4. Promotion of Cleaner Production Investments: International Experience

In every country where CP concept was introduced, the progress depends on many different factors and on shifts in their configuration that take place over time. After detailed CP projects analysis in Zimbabwe, Tanzania, Uganda, Nicaragua, Guatemala, Vietnam, China and Russia was found, that most environmental issues are not explicitly taken into account were people do not have basic understanding or practical experience in CP project development and implementation. Therefore, the environmental impacts and their economic consequences are often underestimated. The fact that some environmental issues are and others are not taken into account, leads to confusion and misinformation. Therefore [6]:

- it is very important to train CP experts and industry representatives to evaluate systematically economic and managerial CP activities in companies (not only provide technological solutions or recommendations); there is a need also to explain the benefits. This leads for motivated and economically feasible CP project development and the environmental impact of the project is evaluated on micro- and macro-economic levels;
- CP Centres (CPC) should play one of the crucial roles in CP promotion activities; they should concentrate on their core functions of dissemination of information, education, training and communication between companies as well as governmental and financial institutions; CP experts should have sound understanding of technological and economic issues. This will ensure sustainability of CP centre and efficiency in CP project development and implementation. In assessing country needs, typically separate providers of aid approach the same sector in the same country. Even sharing these studies and learning from the analysis of each other is far from systematic. Therefore coordination of country CP concept development and investment demand analysis should lay on CPC, which should have a strong position and authority as well as over the government and industry. A consultative process, again led by the CPC, could be launched within the country at the national and regional levels. Involving the private sector, the governmental institutions and international organisations the process would provide a basis to define the national CP investment promotion strategy. At this stage, it should be stressed the real and effective Basic Capacity level (BCL) should created in the country.

After BCL is created the country should design its own national development strategy, based on needs and national/international experience. Therefore, it should be stressed that two kinds of activities - political (efforts on reform tax policies, use of market based instruments, regulatory policy, education and other tools that motivates decision – makers to select CP from available choices) and – industry based (specific environmental projects, technical assistance and direct financing environmentally sound projects in industry) should be integrated in order to achieve the following goals:

- strengthening support for CP among policy-makers;
- promoting the use of a wider range of policy instruments;
- emphasising regional and local "ownership" of CP programs;
- further implementing environmental management systems and standards;
- establishing and strengthening financing mechanisms to provide investment capital at affordable rates, and strengthening capacity to prepare financially viable environmental projects;
- developing methodologies to assess the impact of CP programs, particularly in economic terms.

It can be concluded that environmental performance, measured through the adoption of sophisticated cleaner production processes, is increasingly regarded as an indicator of business health. Good environmental management reflects good management in general. To the extent that financial institutions share this perception, pressure on firms to adopt cleaner production processes will be much greater. Additionally a good indicator for financial institution to avoid business that may face costs associated with environmental liability.

5. Conclusions and Considerations

A number of programmes and projects in the area of sustainable industrial development have been implemented in Lithuania during the last decade. These projects resulted in a number of cleaner production measures implemented in industrial enterprises. A number of companies implemented effective environmental management systems based on cleaner production approach. Lithuanian experience in financing of cleaner production investments is particularly valuable and could be used in other countries.

Only application of a proper mix of different strategies and tools can ensure sustainable industrial development. Strategies and tools applied by industry can vary from technical to managerial measures focused on processes or on entire life cycle of the products.

Industry (particularly small and medium sized enterprises) often does not have necessary information, knowledge, experience or resources to implement sustainable industrial development measures and need appropriate assistance. This can be ensured by establishing cleaner production centres or similar institutions. Effectiveness of CP Centres' operations and their contribution to achievement of wide-scale CP application depends on many different aspects related to the Centres' organisation, range of their activities and relations with other stakeholders. Such institutions could carry out many important activities. Training, demonstration projects and information dissemination are essential elements of awareness raising and capacity building [2].

Involvement of all stakeholders is also crucial to ensure sustainable industrial development. One of important roles that CP Centres should play is to work as an interface between government, industry and other stakeholders. At the same time, CP Centre could also play an important role in both local and international networking.

As it was indicated many times, financial services alone will not be able to ensure sustained CP development. In such cases non-financial support services are expected to be offered by other service providers. Synergy between financial services and business development services (BDS) can make credit schemes more effective and can produce a more successful outcome in lending programmes.
The experiences and analysis of CP investment projects implementation in industry shows that companies need to account environmental costs for the same reason they account other costs: environmental costs affect their bottom line. Environmental costs may be substantial portion of a company's total costs, although many companies are not aware of it. As usual companies are spending significant amount of money on pollution control. In most cases the amounts of the spent money represent the most obvious and therefore most easily measured of environmentally related costs. But it is only tip of the iceberg. Hidden environmental costs may be greater than expenditures to pollution abatement and control and uncovering of these hidden costs can provide significant opportunities for decision making in production, environmental performance and business planning.
Finally, to ensure sustainable industrial development, there is a need to create framework conditions that provide incentives for industry to apply cleaner production and other sustainable industrial development measures. In this regard, authorities have particularly important role to play by applying appropriate regulatory, economic or voluntary approaches.

References

1. Staniskis J.and Arbaciauskas V. (2003). "Sustainable Industrial Development: Strategies and Tools Aimed at Improvement of Industry Performance in Lithuania". Environmental Research, Engineering and Management, ISSN 1392-1649 Kaunas, Technologija, 4(26): 10-14.

2. Staniskis J. and Arbaciauskas V. (2004). "Institutional capacity building for pollution prevention centres in Central and Eastern Europe with special reference to Lithuania". Journal of Cleaner Production ISSN: 0959-6526. Elsevier Science, Volume 12, Issue 3:207-214.

3. Staniskis J. and Arbaciauskas V. (2004), "The sustainable industrial development: reality and vision". In: Technological Choices for Sustainability, ISBN 3540211314 Springer – Verlag Berlin Heidelberg New York pp. 91 – 100.

4. Staniskis J. K., Stasiskiene Z,and Kliopova I. (2002) Cleaner Production: Systems approach (in Lithuanian). Monograph. Kaunas: Technologija, 366 p.

5. Staniskis J. K. and Stasiskiene Z (2003) "Cleaner Production Financing: possibilities and barriers". Clean Technologies and Environmental Policy, Vol.5, No.2:142 - 147.

6. Stasiskiene Z. (2001) Environmental Accounting in Lithuanian industry: analysis of necessity, possibilities and perspectives. Environmental research, engineering and management. ISSN 1392-1649 Kaunas: Technologija, 2 (16):56-64.

INHERENT PARADOXES IN THE INTERNATIONAL REGULATION OF INDUSTRIAL ECOLOGY: CAN SUCH LEGISLATION BE CONSIDERED SUSTAINABLE FOR THE ELECTRONICS INDUSTRY?

Julian Scott YEOMANS, Yavuz GUNALAY
Operations Management and Information Systems Area Schulich School of Business, SSB S338 York University, CANADA
Management Department Faculty of Business Administration Bilkent University 06533, Ankara, TURKEY
syeomans@schulich.yorku.ca, gunalay@bilkent.edu.tr

This study examines issues related to the challenges faced by the electronics industry with concurrent industrial ecology and waste disposal legislation. Industrial ecology practices encourage industrial systems to mimic ecosystems by having all discarded, returned, or otherwise spent products from manufacturing processes become the raw material inputs of subsequent manufacturing processes. New legislation in Europe, Asia, and North America will provide a driver for industrial ecology, materials recovery, and remanufacturing practices throughout the global electronics industry. At the same time, recently enacted legislation has banned the landfilling and incineration of durable electronic product waste. The goal of these new disposal regulations is to prevent a significant source of hazardous waste from entering the eco-system. However, regulations for reclamation, remanufacturing and reprocessing become misplaced when the targeted practitioners of these directives can neither legally re-use the resultant reclaimed materials nor legally store or dispose of the ensuing wastes. The open question that must be reconciled concerns the sustainability of legislation efforts aimed at enforcing industrial ecology when this legislation is simultaneously combined with concurrent regulations banning all legal means of disposal for the resulting wastes.

Introduction

The essential principle underlying the practice of industrial ecology is that industrial systems ought to mimic the behaviour of natural ecosystems by having all discarded, returned, or otherwise spent manufacturing products used as raw material inputs in subsequent manufacturing operations (Linton & Yeomans 2003, 2004; Linton et al. 2004). In closed-loop industrial ecosystems, the raw material input requirements of manufacturing processes are met by the wastes supplied from the discarded products. Environmentally sustainable closed-loop production, consumption, and disposal systems occur only when the supply and demand for the industrial wastes are exactly balanced.

Several recent pieces of legislation mandating the adoption of industrial ecology practices have been enacted to promote such sustainable activities within the global electronics industry. Resource recovery from durable electronic products provides a timely illustration of the recovery challenges created by enforced industrial ecology, since concurrent legislation has also been passed requiring their remanufacturing into alternative products in North America, Europe, and Asia, while simultaneously banning their disposal in landfills and incinerators (DEP, 1998; DEP 2002; EPA 1998; EU, 2003; Federal Register, 2002; Linton, 1999; State of California, 2003; State of Minnesota, 2003).

The goal of these new regulations is to prevent a significant source of hazardous waste from entering into the eco-system, since durable electronic products contain numerous toxic substances (particularly metals) including lead, mercury, cadmium, phosphorus, hexavalent chromium, barium, PBB, and PBDE.

Linton & Yeomans (2003, 2004) and Linton et al. (2002, 2004) have demonstrated that significant quantities of the metals recoverable from electronic products can be expected to enter the waste stream throughout the next 50 years in a form considered ideal for post-consumer remanufacturing purposes. Therefore, the legislation banning electronic waste disposal in combination with the mandated remanufacturing requirements should lead to numerous financially attractive business ventures for the reprocessing and recycling of these waste metal streams.

Unfortunately, while the motivation behind the re-use of post-consumer wastes is environmentally well-intentioned, enforced industrial ecology legislation for durable electronic products may, instead, produce unsustainable environmental consequences. This is because a significant proportion of the durable electronic products are not conducive to end-of-life industrial eco-system practices, because they: (i) obviously contain materials that engender considerable public health concerns; (ii) are in the declining-market stage of their product lifecycles, and; (iii) are considerably threatened by technological obsolescence. Furthermore, other studies have revealed that manufacturing companies have redesigned their products without the use of these metals as production inputs, resulting in essentially no demand for their use in any of their newly manufactured product-lines (Halluite 2002; Halluite et al. 2005). In addition, several conventions have been instituted that effectively prevent any international transboundary movement of hazardous wastes (Basel, 1989; Rotterdam, 1998; Stockholm, 2001). Consequently, by eliminating all legal means for both within- and between- country disposal, concurrent with the limited and declining applications for reprocessing, the enforced introduction of industrial ecology practices for durable electronic wastes will necessarily create a supply-demand imbalance that is unsustainable and will inevitably produce significant hazardous waste material storage repercussions.

Durable Electronic Wastes as a Supply Source for Post-Consumer Remanufacturing

Linton et al. (2002, 2004) and Linton & Yeomans (2003) extensively examined several alternative approaches for estimating waste disposal and resource recovery patterns from different types of long-lived durable electronic products. Though sales and previous usage serve as the primary indicators for the availability of wastes from consumable products (Kelle & Silver 1989a, 1989b; Toktay et al. 2000), due to the much wider variability in their use, failure rates, and post-failure storage behaviour this is not the case for long-lived durable electronic goods (Linton et al. 2004; Rathje & Murphy 2001; Tchobanoglous et al. 1993). In particular, estimates of future electronic waste streams require effective forecasting of household disposal patterns (Rathje & Murphy 2001; Tchobanoglous et al. 1993), which proves to be an extremely challenging problem involving many uncontrollable and uncertain elements (Linton et al., 2002; Linton & Yeomans 2003). Linton et al. (2004) described how the major sources of waste stream uncertainty require estimations of; the stage of the product lifecycle, the component weights containing the recoverable materials, the time between failure and entry into the waste stream, reclamation proportions, future sales, and the rates at which alternate technology displace the existing technology.

For example, using historical data and stochastic estimators of the other uncertainties, Linton et al. (2004) showed that the total quantity of lead residing in the cathode ray tubes (CRTs) of North American households could be estimated by the probability distribution shown in Figure 1.

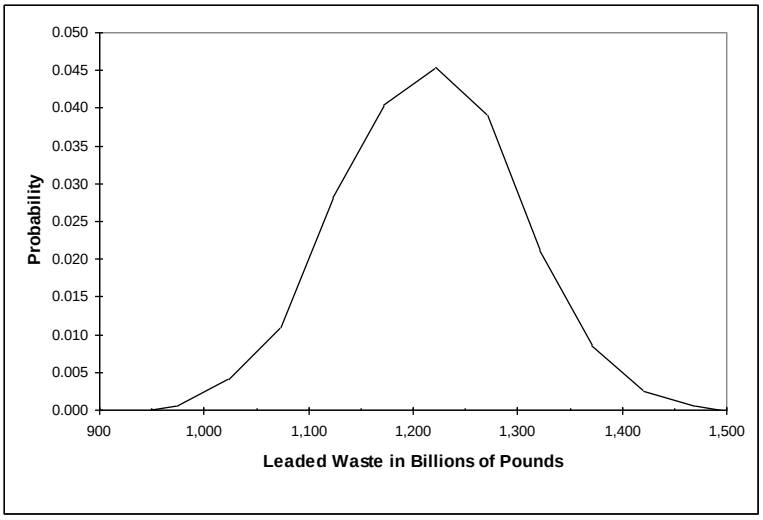


Figure 1: Quantity of Recoverable Lead Residing in North American CRT Televisions

Linton et al. (2004) then combined historical television sales data with forecasted future sales to project the future CRT waste stream onto the time horizon between the years 2000 and 2050. In addition to the forecast of the number of televisions sold over the course of this period, this projection had to incorporate the displacement effect from possible future competing technologies. This need to incorporate the new technology component was essential due to the impending technological obsolescence of CRTs through replacement by technologically superior flat-panel displays together with the mandated switch from analog to digital broadcasting by the Federal Communication Commissions (FCC) in the United States. This was achieved by considering several different technology displacement scenarios. The most conservative displacement scenario was one in which all CRT television sales effectively ceased immediately - implying that all future lead waste from CRTs could only result from televisions already in existence. Figure 2 illustrates the waste trajectory recovery pattern for the 2000-2050 period under this scenario. Hence, it could be observed that even if all existing CRT television sales ceased immediately, a significant supply of leaded CRT wastes would be entering into the waste stream. Figure 3 illustrates the recovery pattern under a scenario in which CRT televisions continued to be sold at or above their current volumes.

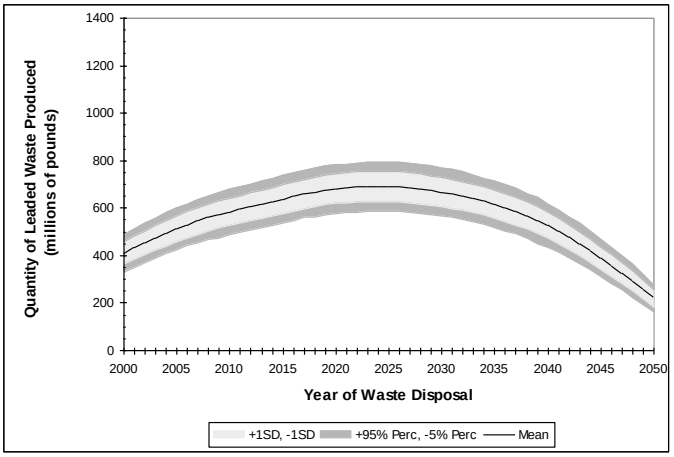


Figure 2: Leaded CRT Waste Recovery Trajectory under a Scenario in which CRT Television Sales Cease Immediately

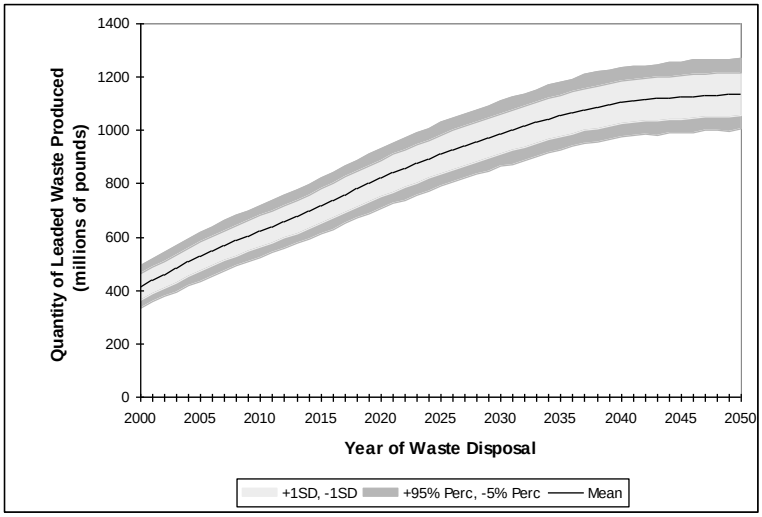


Figure 3: Leaded CRT Waste Recovery Trajectory under a Scenario in which CRT Television Sales Continue At or Above Their Current Volumes

These figures clearly indicate that significant quantities of lead waste from CRTs would be recovered well into the foreseeable future. The existence of these large quantities of lead over a protracted period of time would seem to bode well for their inclusion in industrial ecology practices. More significantly, these estimation approaches were subsequently extended to numerous other product-lines of durable electronic goods and similar supply trajectory patterns were demonstrated for several other metals contained within these products (Linton & Yeomans 2003, 2004). The net beneficial result from these findings is that significant supplies of various metals can be expected to be continuously entering the waste stream over a protracted period of time in a form that is ideal for post-consumer remanufacturing applications. Thus, legislation banning electronic product disposal together with the mandated remanufacturing requirements should lead to numerous potentially attractive business ventures for reprocessing and recycling the high metal contents found within these durable electronic waste streams (Linton et al. 2002; Linton & Yeomans 2003).

Lack of Demand for Electronic Wastes in Post-Consumer Remanufacturing and Its Consequences

The measure of the true success of industrial ecology, remanufacturing, and reverse logistics does not occur until the supply and demand loop has been completely closed (Rathje & Murphy 2001; Tchobanoglous et al. 1993). In closing the loop, the primary differences between views of traditional "business-based" manufacturing practices and those of the more recent "industrial ecology-based" remanufacturing philosophies revolve around the processes by which waste material supplies are reconciled with product demand. While proponents of an industrial ecology-focused approach prefer to exactly match all waste product disposal with product supply, business-focused proponents prefer to utilize only a small proportion of disposed wastes to ensure that the raw material base (i.e. the disposed waste product) is readily available at a low price (Linton et al. 2004). Reconciling these divergent philosophies is, therefore, an essential component for the effective implementation of industrial ecology, since the two concepts require that the greatest economic value be obtained from the waste while simultaneously resulting in the smallest environmental impact. Hence, if industrial ecology-based remanufacturing of electronic wastes is to be effectively operationalized, then appropriate mechanisms for balancing the requirements of both industrial ecology-based operations and traditional business manufacturing practices must be implemented that integrate the supply of disposed wastes with the corresponding industrial demand for the metals. The fundamental key to its success is the establishment of the effective balance between the waste supplies and the product input demands (Rathje & Murphy 2001).

However, in studying manufacturing practices in North America, Halluite et al. (2005) discovered that virtually all companies have moved away from the use of the vast majority of these toxic metals in the design of their new electronic product-lines. Furthermore, in the existing markets for the electronic waste metals, current recycling programs are already reclaiming substantial quantities of the required materials. The combination of these findings is that most of the electronic metals currently being used are already being recovered from secondary sources and, simultaneously, the demand for metals obtained from primary sources has declined precipitously (Halluite 2002; Halluite et al. 2005).

Simultaneously, the legislation banning electronic waste disposal from landfilling and incineration will result in the immediate consequence of injecting a large new source of secondary materials into the "marketplace". While this has the environmentally beneficial effect of immediately reducing the demand for these metals from primary sources, given the identified diminution in industrial demand, the increased supply of the metals provided by these electronic wastes far outstrips any existing demand, leading to a supersaturation of the market (Halluite 2002; Halluite et al. 2005). Thus, either major new applications must be found for these large quantities of waste or significant new storage locations become requisite. However, the recent "environmentally conscious" practices of benign manufacturing, sustainability, and future-liability-avoidance have resulted in the simultaneous elimination of many hazardous materials from being used as inputs in the design of new products (Halluite 2002; Halluite et al. 2005). As a result, the current demand for electronic waste metal inputs in newly-manufactured products has become virtually non-existent (Halluite 2002; Halluite et al. 2005).

Implications for the Enforced Practice of Industrial Ecology

What becomes readily apparent is that the changes to product compositions, designs and technological bases have created significant problems for the newly legislated industrial ecology policies. The elimination of all legal means for electronic waste disposal, concurrent with the limited and declining market for the reprocessed metals, causes significant supply-demand imbalances for the resulting oversupply from the electronic wastes. Under these circumstances, the regulations that had been intended to encourage sustainability and industrial ecology instead produce unintended, but very significant, secondary environmental consequences. Namely, with no outlets for the recovered toxic metals in any remanufactured products, the net effect of the enforced industrial ecology practices is to introduce long-term hazardous waste storage issues for the resulting electronic wastes.

The significant implications from these findings regarding induced – but unintended – storage requirements extend to all well-intentioned industrial ecology-based legislation targetted at the recycling and remanufacturing of industrial wastes. While from a narrow, technical perspective most industrial and municipal wastes can always be considered recoverable, recyclable, and reusable (Tchobanoglous et al. 1993), the major impediment to waste recovery always lies in the finding of appropriate outlets for the recovered materials that simultaneously make economic, political, environmental, and psychological sense (Rathje & Murphy 2001). The supply of waste products available as raw material inputs is generally never the constraining issue. However, the requisite conditions for achieving true closed-loop industrial ecology cannot occur until someone purchases (or is paid to take) the recovered materials, manufactures them into something else, and then resells this new product. When a lack of demand for the recovered materials exists, the market for the waste product rapidly becomes oversaturated with the excess materials – filling up as quickly as the landfills that the waste had originally been diverted from.

The frequently overlooked message for those trying to legislate industrial ecology practices is that they must understand and pay close attention to these market imbalances. When the primary concern of the legislation is to increase the supply of the recovered materials rather than to expand the markets for the recyclable materials, then the enforced industrial ecology legislation must be assessed with a certain degree of skepticism. Unfortunately, this expansion in supply without regard to demand appears to be the overriding condition induced by the industrial ecology legislation directed at the durable electronic wastes. The combined conditions of significant over-supply with no legal disposal outlet must inevitably lead to secondary storage issues.

Clearly, societal concerns regarding the use of toxic materials in remanufacturing and the subsequent trade-offs associated with their post-use disposition have to be addressed ahead of time, so that suitable decisions can be made and supporting infrastructure can be sufficiently developed. Properly conceived and executed, an industrial ecology program can make good economic sense, can help save natural resources, can help reduce pollution, and can divert tributaries of the waste stream away from landfills and incinerators. However, the best of environmental and ecological intentions established by regulations for the remanufacturing and reprocessing of consumer goods (such as durable electronic products) become egregiously misplaced when all of the targeted practitioners of the industrial ecology directives have no propensity to engage in the re-use of the resultant waste materials. It must be recognized that while industrial ecology is a valuable philosophy for coping with society's waste, it is by no means a panacea when the remanufacturing loop cannot be successfully closed. As illustrated above, the enforced implementation of industrial ecology practices using electronic wastes will not be sustainable until this loop has been closed.

Conclusions

There can be little opposition to supporting the premise that adopting sustainable manufacturing practices should provide improvements to the state of environment. However, several recent initiatives taken to reduce the ecological effects of industrial activities could, in fact, be unsustainable, by having precisely the opposite impact. Regulations banning the landfilling and incineration of durable electronic products are environmentally well intentioned, with their goal being to prevent a significant source of hazardous waste from entering the eco-system. It can be demonstrated that these regulations will generate a significant pulse of electronic wastes that will enter the waste stream over a considerable period into the foreseeable future.

The beneficial effect of these findings for industrial ecology purposes is that significant quantities of various metals will be continuously available over a protracted time horizon in a form that is ideal for post-consumer remanufacturing. The disposal legislation together with mandated post-consumer remanufacturing requirements should necessarily, therefore, lead to numerous economically attractive business ventures for reprocessing and recycling the high metal content existing in the electronic wastes. Thus, the legislation in Europe, Asia, and North America should provide a strong driver for industrial ecology, materials recovery, and remanufacturing practices throughout the global electronics industry.

However, most durable electronic products do not prove suitable for end-of-life industrial eco-system practices, since they: (i) contain materials that engender considerable public health concerns; (ii) are in the declining-market stages of their lifecycles, and; (iii) are considerably threatened by technological obsolescence. As electronic manufacturers are forced to move away from the use of several substances in their production inputs, the industrial ecology legislation actually creates a state of zero demand for their use as inputs in any newly-designed manufactured products. Consequently, by eliminating all legal means for disposal, concurrent with the limited and/or non-existent applications for reprocessing, the enforced introduction of industrial ecology practices for electronic wastes creates an unsustainable supply-demand imbalance that will inevitably lead to large, long-term hazardous waste storage problems.

Industrial ecology, remanufacturing, and reverse logistics are founded on the principle that industrial wastes can be economically redirected into alternative products and should be strived for wherever possible. While environmental policies that promote sustainability and industrial ecology offer advantages in stable industrial settings, their anticipated benefits can be significantly confounded by changes to the product designs of durable goods due to scientific/technological advances and to the introduction of more environmentally benign designs. The regulatory paradox that must be resolved is that legislation requiring product take-back and reprocessing focuses on products and materials that are seen as undesirable components of landfills, but these products consequently all contain undesirable components that must somehow be used as raw material input in some alternative product. Unless the impacted products possess both stable designs and input requirements, then significant secondary, unsustainable environmental issues related to waste storage will arise – which is the case for electronic wastes. Although industrial ecology laws are well-intentioned, they are unsustainable and create alternative environmental problems when no market or outlet exists for the specific waste product. To avoid unsustainability problems in the future, appropriate forethought must now be directed to the long-term outcomes of enforced industrial ecology policies. While the electronics industry has been the first to encounter industrial ecology and reprocessing legislation on a global scale, similar consequences can also be expected to any similar directives targetted at other durable goods manufacturers.

Acknowledgement
This work was supported in part by grant OGP0155871 from the Natural Sciences and Engineering Research Council.

References
Basel. (1989). Basel Convention on the Control of the Transboundary Movements of Hazardous Wastes and Their Disposal. www.basel.int/text/documents.html

Department of Environmental Protection (DEP 1998). (1998). Hazardous and solid waste regulations for Massachusetts: 310 CMR 30.000 and 310 CMR 19.00, Public hearing draft regulations for the management of discarded cathode ray tubes. Boston, MA, Department of Environmental Protection.

Department of Environmental Protection (DEP 2002). (2002). Focus on Televisions and Computer Monitors: Lead. Department of Environmental Protection, Florida (http://www.dep.state.fl.us/waste/categories/electronics/pages/lead.htm).

Environmental Protection Agency (EPA 1998). (1998). Residential collection of household end-of-life electrical and electronic equipment. EPA-901-R-98-002. Boston: EPA.

European Union (EU 2003). (2003). Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE), Official Journal, L 037, 13/02/2003, pp. 24-39, Brussels, European Union.

Federal Register. (2002). Hazardous Waste Management System; Modification of Hazardous Waste Program; Cathode Ray Tubes and Mercury Containing Equipment; proposed rule, 67(113): 40,508-40,528, Washington, DC.

Halluite, J. (2002). Leaded glass and lead diversion from US Landfills. MASc. Thesis. Polytechnic University, Brooklyn, NY.

Halluite, J., Linton, J., Yeomans, J.S. and Yoogalingam R. (2005). The Challenge of Hazardous Waste Management in a Sustainable Environment: Insights from Electronic Recovery Laws. Corporate Social Responsibility and Environmental Management. 12(1), 31-37

Kelle, P. and Silver, E. A. (1989a). Forecasting the returns of reusable containers. Journal of Operations Management. 8(1), 17-35.

Kelle, P. and Silver, E. A. (1989b). Purchasing policy of new containers considering the random returns of previously issued containers. IIE Transactions. 21(4), 349-354.

Linton, J. (1999). Electronic products at their end-of-life: Options and obstacles. Journal of Electronics Manufacturing. 9(1), 29-40.

Linton, J. and Yeomans, J.S. (2003). The Role of Forecasting in Sustainability. Technological Forecasting and Social Change. 70(1), 21-38.

Linton, J. and Yeomans, J.S. (2004). Materials Recycling and Industrial Ecology. Nature Materials. 3(4), 199-201.

Linton, J., Yeomans, J.S. and Yoogalingam, R. (2002). Supply Planning for Industrial Ecology and Remanufacturing Under Uncertainty: A Numerical Study of Leaded-Waste Recovery from Television Disposal. Journal of the Operational Research Society. 53(11), 1185-1196.

Linton, J., Yeomans, J.S. and Yoogalingam, R. (2004). The Facilitation of Industrial Ecology, Product Take-Back, and Sustainability through the Forecasting of Television Waste Flows. Environmental Informatics Archives. 2(4), 420-431.

Rathje, W. and Murphy, C. (2001). Rubbish!: The Archaeology of Garbage. University of Arizona Press, Tucson, AZ.

Rotterdam. (1998). Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. www.pops.int

State of California. (2003). Electronic Waste Recycling Act of 2003 (SB 20) SHER, Statutes of 2003, California. State of Minnesota. (2003). Statute 115A.9565.

Stockholm. (2001). Stockholm Convention on Persistent Organic Pollutants. www.pic.int
Tchobanoglous, G. Thiesen, H. and Vigil, S. (1993). Integrated Solid Waste Management: Engineering Principles and Management Issues. McGraw-Hill, New York, NY.

Toktay, L. B., Wein, L.E. and Zenios, S.A. (2000). Inventory management of remanufacturable products. Management Science. 46(11), 1412-1426.

NEW DETERMINATION OF INTERESTS IN THE FUTURE OF RELATIONSHIP BETWEEN THE ENVIRONMENT AND BUSINESS

Zehra GÜL
Kahramanmaraş Sütçü İmam University (KSU)- Faculty of Economics and Administrative Sciences, Department of Management, TURKEY
z.gul@ksu.edu.tr

Managements should have been forced to take precautions about tha rival managing conditions (in which they take place), environmental movements and environmental public pressures. As it is annexed, management has been the first subject fort he environment.

The expansion of globalization has occured important results for managements and the environment. In the globalization of the world, these changing and conversion's effects on our country management can't be overlooked. Both international rivalry and the development in EU period make the management understanding compulsory fort he environment which develops according to tendency of globalization and the global environment. Legal arrangements (international agreements and plans, environmental laws in the country), consumer's pressure, consumer's conscious are the effective reasons for this. Also the conscious of the environment in the society affects the management which forms a part of the society.

In this work, the benefits of management which develop circumstances for the globalization and also its means, barriers and important subjects to apply will be tried to be presented. Globalization and the environment, globalization period and environmental relationship, the future of the relationship between the environment and the management, and the rivalry and solutions of problems between the environment and the management will be worked out theoretically.

Introduction

All businesses, whatever their activities, are under a continuous interaction with their environments. All businesses have some influence on the environment (www.epa.sa.gov.au , 2006). An enterprise, which produces goods or services, manufactures the surrounding resources (inputs) with its own resources and produces again new products/services (outputs) which are beneficial to its environment. Within this process, the business both is effected by its environment and it influences its environment at a great extend, as well.
Its very difficult to draw the definite borders of a business since there are very different and lots of environmental agents. The concept of business environment reminds to people economic, technological, social, legal, and political the conditions of the business. However, there is also its environment, in the ecological meaning, which gets more importance during the time.

Recently, as a result of the understanding of sustainable development and the increase of consciousness of saving environment, there are significant changes in the views of business about the environment. Within this perspective, certain new ideas appear such as productive use of resources, minimizing the wastes, recycling, and environment-friendly design and packaging. It depends, firstly, on the sensitivity of top managers of business enterprises to set up the consciousness of environment and to form an environmental management system (www.istanbul.edu.tr, 2006).
As a result of increase in social and political pressures, businesses began to produce green (environment-friendly) products to prevent environment pollution, to minimize and even to stop the wastes completely. And, they also began to use production technologies and methods in order to prevent and to control wastes, and pollution; they began to form new designs and packaging which uses less resources and they work on new studies for recycling (www.akdeniz.edu.tr, 2006).

Environment and Environmental Issues
Environment is the total of the physical, chemical, biological, and social factors, in a definite period of time, which influence the human activities and other living things directly or indirectly and immediately or in the future. Environment tells us the relationships among the human beings, and the interactions within these relationships; the relations and interaction between the human and rest of the living things (that is plants and animal species); the relations and interactions between the human and non living things (that is air, water, soil, mines, and climate) that are located around the living things (Keleş-Hamamcı, 1998).
Nowadays, environment is one of the subjects that was mentioned at the greatest extent about its theory and application. Alongside its popular use and an intensive care by scientific units, the topic of environment got an importance that influences and determines the future of the planet and all living things directly as a result of destruction of nature by mankind at the tremendous degrees (Parlak, 2004: 13).

Although there are regional differences of degree and extent of environmental problems, those environmental problems are seen intensively in all parts of the world. For example, environmental problems, which present an unsustainable life and which have trans-boundary dimensions in North America and Europe, create horrible risks for human health. The regions, where are developing market economies (Eastern Europe, South-Eastern Asia, and some regions of Latin America), face with negative environmental developments such as increasing demand of energy and other problems related with industrialization. This situation give rise to acidification, emission of green-house gasses, degradation of air, water, and soil quality, and serious health hazards.

Worldwide poverty, population increase over the levels of production and development, and related global environmental relations force us to find out a global solution. Despite the existence of necessary technological opportunities, certain immediate problems such as economic pressures, finding foot, and sheltering restrain application of solutions to these problems in the developing countries.

Although the speedy increase of world's population is announced as the main reason of degrading of environment and consuming of resources very quickly, there are other crucial reasons of environmental disasters such as existing form of consumption, inefficient use of resources, waste production, industrial pollution, and consumption forms which give rise to intensive pollution (www.metu.edu.tr, 2006).

Only within last thirty years, influence of environmental problems were felt by the world's public opinion, they were accepted as important issues. As a matter of fact, Stockholm Conference of 1972 was done as a result of UN's, or certain countries' and world's public opinion, concern on the issue and later international and national organizations were founded for environmental problems. Moreover, the countries' constitutions, and legal systems paid great attention to the environmental crisis. Mankind-nature relations transferred from environment to the environmental problems with a transition from agricultural society to the industrial society (Ökmen, 2004:328).

Environmental problems that were appeared as a result of mankind-nature relations were perceived as a danger in 1960s and the business were found guilty. In 1970s, environmental problems entered into the world's agenda extensively and they become the problem for the whole world. In 1980s and 1990s certain owners of business noticed that environment become a critical problem for them. In 1980s, the responsibility understandings of the business also resulted in much care about the environment (Akdoğan, 2003: 68). Certain international actions also played key roles in the formation of business companies' consciousness of environment. Some of these international events are; Business Charter for Sustainable Development published by the World Business Organization, CERES Principals published by certain companies and groups which came together to preserve the environment in USA and Canada, Responsible Care Principles and similar principles and documents (www.istanbul.edu.tr, 2006). The council established before Rio Conference at 1992 turned into World Business Council for Sustainable Development (WBCSD) at 1995 and this organization led the business and helped them to develop ecological productivity, and business responsibility on environmental issues (Akdoğan, 2003: 75). Parallel with these developments, in 1996 The Index of Corporate Environmental Engagement began and FTSE measures and publishes the activities of 100 companies' activities annually. The Index of Corporate Environmental Engagement tests the following 10 exercises of companies (Blair-Hitchcock, 2001: 280).

- Common environmental policy
- Committee members responsible from environmental issues
- Environmental targets
- Environmental purposes
- Cooperation policy
- Management policy
- Personnel and environmental policy
- Environmental management system
- Environmental supervision
- Environment and producer policy

With this application both the performance of the companies can be controlled and moreover it is also possible to see which index criteria are adapted best and which are obeyed worst. Grading system gives an indicator for competition and forces companies to improve their performance since this process can be followed by the people (Blair-Hitchcock, 2001: 281).

In the years of 2000s it is understood that environment is an unavoidable thing for business and it is the most significant factor which determines the future of business. In the beginning of 2000s business shifted from an understanding that doesn't cares environmental issues, never thinks to filter solid wastes, polluted water, and emissions to the an understanding that notices the limits of resources, applies sensitive policies for recycling and filtering the wastes, uses new environment-friendly technologies in the production, and tries to preserve environment not only for the sake of law, but also for the sake of environmental philosophy itself (www.istanbul.edu.tr, 2006).

Sustainable Business and an Understanding of Environment-Friendly Management

Industrialization is on of the most important indicators about the development of the countries. Since it depends on the understanding of meeting unlimited human wants with limited resources and an understanding of minimum input and maximum output, industrialization bring about environmental problems. For this reason, alongside with production activities of business, which are the basic factor of industrialization, their other attitudes and behaviors; also result in appearance of environmental problems. In accordance with this view, business should embrace an environment-friendly understanding of management and they should become "sustainable businesses". The base of sustainable business includes the triangle of economy-business-ecology which should balance each other and work in the harmony. Environmental competitive conditions, environmental movements, and public opinion's pressure force companies to take measures about this matter. Hence, environment became a vital subject for the companies.

A new concept emerged that help business to pay more attention to the environment and can be determined as "environment-sensitive business" or "green business" (www.akdeniz.edu.tr, 2006). Environment sensitive business depend on an understanding that cares environment in the process of decision making; aims to minimize or completely eliminate the harm given to the environment in the industrial activities; for this reason changes the design and packaging of the products; changes the process of production; tries to the set up the philosophy of preserving the environment; and performs its responsibilities towards the society (www.istanbul.edu.tr, 2006). In the evaluation of the understanding of environment-sensitive business one of the important keys is to study the behaviors of consumers that how they perceive environmental topics and problems. Thus, companies reach to the environment-sensitive consumers and maximize their profit by meeting those consumers' demands and by doing so the companies will harm the environment at the minimum level (www.akdeniz.edu.tr, 2006).

The World Business Organization (ICC) has evaluated the effect of sustainable understanding on the business policies and, by taking also the Principles of Total Quality Environmental into consideration, prepared a Business Charter for Sustainable Development that can be summarized with following 16 principles*:
1- Environmental management has priority.
2- Environmental management and business management should be integrated.
3- The principle of "continuous improvement" should be applied.
4- Training and motivation of employees should be enabled.
5- In the decisions of project and investments, a priority should be given to evaluation of environmental effects.
6- Both in the process of production and consumption of goods, environmental harms and use of energy should be minimized.
7- It is essential to be close to the client and learning from the client.
8- For the environmental improvement, there should be continuous activities of research and development
9- Waste management should be applied.
10- Instead of checking the results, it is better to exercise "preventive approach" principle and pollution must be prevented at each level.
11- There should be cooperation with subcontractors.
12- A preparation program should be done for emergency cases.
13- Environment-friendly technology and management should be transferred.
14- Shareholders, employees, people, and official institutions should be informed periodically.
15- Environmental performance should be measured and evaluated continuously.
16- All activities about environment should be contributed and supported.

In any business –by paying attention to Business Charter for Sustainable Development there may be en environmental policy.* (www.kalder.org.tr, 2006).
The Future of Relationship between the Environment and Business *
Business companies must make plans for the future and they tend to make evaluations which depend on the projects. In many cases, they make estimations for future by using previous tendencies and experiences.

In the 21st century, there is an unexpected speed of changes in every area. Within this century, population of earth increased four times and reached to six billion people, global trade increase fifteen times, global wealth increased seven times, national income per capita increased six times, life expectancy increased two times. Unexpected economic growth gave rise to unexpected environmental stresses. In terms of business and environment, which tendencies will shape the future in terms of business and environment? For this question, we can review three main areas:

- Globalization
- New World Order
- Global Environmental Tendencies

Globalization

Globalization is a very influential power, and it has very vital consequences for the business sectors and environment. Globalization is moving in the direction of interests of multinational great companies (Blair-Hitchcock, 2001: 267). On the other hand, multinational companies have the best opportunities to apply the policies of a sustainable development which intends to set up a harmony among social, economic, and environmental purposes (www1.oecd.org, 2006).

Globalization, often, is accused of harming a lot of environmental values such as destruction of South-Eastern Asian forests. The surrounding countries, without taking environmental results into consideration, wanted to turn natural resources into cash. Possibly, this will continue in the 21 century, as well.
Today, globalization is an important concept that is used in explaining our economic development, social welfare, and even our identity. In other terms, global citizenship and global responsibilities shape our understanding of the world (Louise, 2006). In the process of globalization, some topics gain importance such as democratization, priority of law, protection of environment, terrorism, struggle with organized crimes, human rights, and liberalization (Aktan, 2003).

The concept of globalization has accelerated since 1970s, and it transferred all of the world into a single market by means of the technologies of electronics/data-processing and communication. Globalization can be defined as "integration of national economies with world's markets and gradual determination of all processes of decision making on economics in favor of the dynamics of world's capital accumulation (Günsoy, 2004).

Globalization is formation of a business' all activities in accordance with changing process of the worlds in order to grow and develop it, modernization, and save the current situation of it. An organization, on the way of globalization, as an aim should pay attention to global values and environmental factors. For example, when productivity is cared about, all the resources of the world are supposed to be used by business in a most rational manner in the name of environment and humankind. In the studies of environment, it is found out that environmental issues became global, and the solutions of these problems should be studied according to the results of these problems. It is accepted that, globalization has an influence on the environment, whether positive or negative, in accordance with true and applicable environmental policies of the countries' stable and continuous development (OECD, 2001:34 ; Palabıyık, 2004:250).

Wide spreading of globalization gave rise to vital consequences for business companies and environment. It can not be thought that this transformation of business, in the global world, do not effect business. Both international competition and the developments in the process of EU force a new understanding of management that is sensitive to environment which developed due to globalization and global environmental tendencies. In this condition, legal regulations (international agreements and contracts, domestics' environmental legislation), consumers' pressure/consciousness and similar factors were useful. Moreover, social consciousness about environment also affected business which is a part of social life.

Environment-sensitive management understanding that was developed as a result of globalization helped the growth of environmental consciousness. This interesting fact contributes important benefits to the business such as popular prestige, forming a positive image, certain financial and competitive advantages for the company, and increase in quality, satisfaction of consumer interests, and increasing the market share.

Business managers have to pay more attention to the environmental effects and environmental problems in the process of decision making nowadays when globalization is a very important topic, environmental problems are growing gradually, society become more sensitive towards the environment, and consumers and investors care about the environmental issues more intensively. This environmental responsibility is one of the social responsibilities of the business and it also brings certain benefits to the company such as productivity, minimization of cost, and consumers' satisfaction. Before all, environmental management is one of the most significant steps for a sustainable world which is very essential for the future generations.
New World Order

When the Cold War ended in the late 1990s, there was a great optimism in the minds of people that spending for weapons would be used to stop hunger, cancer would be cured, environmental problems would be solved, and similar expectations.
What are the expectations of international regulations about the environmental issues? Despite the lots of international summits and conferences, only very few things could be done to prevent global warming. However, international cooperation is increasing about the environmental topics. For example, United Nations Environmental Programme's (UNEP) International Declaration on Cleaner Production includes not only national governments, but also greater companies, and international business organizations.
Geo-political estimations of the 21st century mention about the wars/fights for changing water with oil in the Middle East. Moreover, maladministration of natural resources may lead to a political turmoil.

Global Environmental Tendencies
Almost all states main targets is the economic growth. Even the developed countries are slow in this matter, they are more sensitive towards the environmental subjects, (they began to minimize air pollution and emissions from the wastes). Yet, developing countries don't seem to have a good intention about the use of resources or regulation of legislation.

With very few exceptions, main purpose of underdeveloped countries is to improve living standards and conditions by means of economic development. Use of too much polluting fuel technology is included within this discussion. For instance, Indian and Chinese industries mostly depend on coal. Competition for development increases the pollution, and for this reason nowadays China faces with the problem of air pollution very often. However, developing countries escape from taking lessons from developed countries that plundered the earth's natural resources and reached their current higher standards of living.

Global environmental tendencies are not very encouraging for the next century. Global warming is undergoing the warmest years since the mid 19th century. Icebergs of poles are melting rapidly and coral reefs are dying because of this warming. Insurance companies are paying much more money for the climatic disasters and industrial sector is the first area that met with the negative effects of a warmer earth. Since 1974, economic losses because of natural disasters increased nine times and insurance payments increased fifteen times. Results of air warming included the rise of sea level, although it is very slowly, has negatively influenced the low-income regions, and many coastal cities directly. These effects also include food production, environment of wild animals, increasing desertification, and rise of health diseases. Different living forms are also seemed to be under danger. Disappearance of species is due to these reasons and it doesn't seem to be stopped.

Nobody can clearly explain the characteristics of future of environment, but it is clear that it changes very quickly, and business causes certain environmental problems and they have opportunity to treat and cure environment alongside with commercial opportunities.
Influence of Future Business on the Environment*

Multinational companies probably will continuo to grow and by means of this power, they are responsible from anticipating the future tendencies and they should develop solutions. Both Shell and BP-Amoco made important investments on the production of energy which doesn't produce wastes. Globalization, free trade, and financial liberalization will continue to spread their outcomes. Therefore, it can be stated that a lot of current factors will intensify and transfer of resources from south to north is one of these changes. Limitlessness of free trade so extensively will damage the environment.

On the other hand, World Trade Organization (WTO) explained that legal regulations on the environment, in some countries, results in injustice in terms of restricting the trade. According to WTO; it is discrimination if the Organization declares that it will not buy the products of the countries which don't obey certain environmental standards. If WTO goes on this policy, free trade may be forced to obey the minimum standards of environment.

Everywhere, business improves the geographic differences and brings comparative benefits forward. Regional specialization occurs in the areas where businesses are evaluated and they can develop themselves (for instance in the areas where natural resources are donated, cheap and qualified labor force can be reached, and affirmative tax systems are possible). Technological newness has a guiding power and the 21st century will witness developments of computer technology within different areas of life. For example, microchips from now on are smaller, cheaper, and more powerful, they can be located inside the clothes according to the fashion, and they have thermal characteristics that can change according to color, peculiarity, and modes of using.

Von Weizsacker and others (1998) informs about new effective resource economy. Replacing oil residuals with renewable energy, reducing the wastes, adoption of recycling and united pollution control, and cleaning technology are among the basic elements of ecological modernization. There are evidences of using less resource, less pollution emission, and ecological modernization in many developed countries such as France, Germany, Demark, and UK. This situation emerged as result of structural changes in the economies. Accordingly, people's attitudes towards the environmental issues became more rigid and this tendency seems to continue but pollution problem still couldn't be removed at the global scale.

Wide spreading of internet is supposes to change our working behaviors and living conditions radically. In the service sector, a lot of employees use most of their working hours in reading and writing e-mails, surfing and searching at the internet, and communication with their colleagues, bosses, and consumers. If a convenient technological connection is enabled, it doesn't matter whether the employee lives in Kensington, Lochalsh Kyle, or Kuala Lumpur. Internet economy, by eliminating the transportation between home and office, may increase high amounts of energy saving, and may decrease the pollution.

Moreover, bio-technological developments make promises to change the effects of the future. Genetically modified organisms got a negative image by getting the reactions of environmentalists directly. They have a great potential changing environment, or producing bounty, or removing biological differences.

Do the bio-technological enterprises hold a potential of savior or will they destroy the world? The environments, which was never used or used at the minimum levels until now, will be used extensively by the enterprises in the future. These developments occur very rapidly in accordance with complex interaction between the business companies, technological developments, governmental regulations, and demands of the people.

Influence of the Future Environment on the Business*
How will environment influence the business in the future? We can think about certain influences on the topics such as Climate Change, Dangers and Disasters, Urbanization, Waste and Pollution, Differences on Species of Ecosystem, and Consumption of Resources.

Climate Change
The concept of climate change is very new in determination of international policies. Firstly, before Rio Summit of 1992, Framework Convention on Climate Change was accepted by prime ministers and it becomes an important agenda of related international meetings (Mazı, 2004:147).

Changing climate is probably the greatest environmental problem that will affect the business in the 21 century. Climate change, also, will influence the agricultural production, production places will change, and the farmers either successfully adapt to these changes or they will fail. High sea level and loss of coastal regions will force the business to shift to other regions. Warmer climate may boom the industry of air-conditioner. Of course there will be winners and losers, but the cleverest companies are the ones who perceive the tendencies correctly.

Dangers and Disasters

Partly as a result of climate changes, enlargement of the population towards geomorphologic and dangerous regions will increase the probability of natural disasters. Sudden and unexpected disasters may destroy all of the business companies, but normally, a company cam be insured. Yet, the rise of danger and frequency may lead an increase in the insurance payments. This condition may force the companies to change their spaces.

Urbanization

Urbanization not only gives great opportunities to the contractors but also it also presents infrastructure, roads, airports, water, and power sources for the civil engineers. It is also possible that urban growth and future urbanization in the third world cities may present high standards of opportunities.

Urbanization, if planned and regular, may give rise to a lot of benefits. In order to enable a sustainable urbanization, developments should be encouraged that gives minimum damage to the environment. The conditions which realize development are protection of natural habitat, planned urbanization, supplying large green areas, protection of water resources, discouraging of use of motor vehicles, and space and land savings (Ulusoy-Vural, 2001).

Waste and Pollution

In developed countries, there are struggles, at the different scales, against the wastes and pollution. Production of pollution controlling equipments is a growing industry and this is due to the desire of a cleaner environment. Polluters are controlled by means of filters and technologies of waste refinement; that is, the problem not it is dealt with, but its negative results are dealt with. Pollution control is an application that appears after the development of productions and after the appearance of the problem of pollution (www.enve.metu.edu.tr, 2006).

Developed countries are grooving, relatively, in a cleaner manner, and developing countries are growing in a dirtier manner. Level of pollution is increasing in developing great cities and it is supposed to continue to increase. Pollution control will become a trouble in these cities and the possibilities of clean technology for the business will be introduced.

Differences on Species of Ecosystem

Degradation of ecosystem and disappearance of species is increasing; genetic change is being planned despite the opposition of countries, and attacks on to ecosystem seems to be go on. There are economic benefits of using plants and animals in the production of medicine, fibers, oil, cosmetics, tourism and many other areas. In 1997, 10 of 25 best seller medicines were produced from natural resources. Global market value of medicine that was produced from genetic resources is supposed to be 75.000-150.000 million dollars (Mazı-Demirci, 2004: 178). Disappearance of species is not only an ethic and cultural tragedy but it is also use of potential economic interests.

Consumption of Resources

The business, which only depends on some un-renewable resources such as coal and oil, will be punished by the end of these resources. However, in many business enterprises a short term planning may increase the expectations from these resources. And certain amounts of subsidies may be delivered in order to decrease the consumption or to look for alternatives. A more cautious oil company has already begun to differentiate renewable sources of energy such as solar and wind energy. Business of the 21st century should adopt the resource efficiency and they should help the environment.

Future Influences of Environmentalism of Business*

Growth of environmentalism in the last thirty years of the 21st century is noteworthy. Not only by a vertical growth, but also it is the same amongst the views of people. Environmental policies were transferred from marginality to the center. Not only ministries of environment got importance, but also success of green parties increased in the elections.

Especially as long as the salience of environmental issues continues, environmentalist pressure groups will keep their current powers. Moreover, certain pressure groups will try to find out financial resources for their activities, and they also develop similar organizations for the business.

Green media will be more specialized and differentiated probably due to expansion of Web and digital television. This situation will help advertisers to have better conditions of marketing departments. Environmental regulations maybe increase and, current voluntary standards will become obligatory. With the rise of regulations, Small and Middle size enterprises (SMEs) will have to follow the environmental policies and management systems of great enterprises. Behaviors of companies will be influenced from the demands of green consumers. What will be the power and influence of green consumers? Although current indicators are positive, there are a lot of uncertainties in this topic.

Influence of the Future Business on the Environment*

When environment become a problem first time in 1960s, business enterprises were found guilty. Naturally, businessman denied this view and they hoped the disappearance of these ideas. Environmentalist was defined as the people of strange ideas that con not be proved and applied. If they weren't considered important, they would disappear. On the contrary, they didn't disappear, gained power and trust, and they continued to challenge to the business.

In 1980s and 1990s, leaders of some enterprises noticed the importance and necessity of the environment for themselves. With the development and application of ecological modernization, business began to understand the benefit of environmentalists for the sustainability of eco-efficiency, and considered them as the supervisors of the business. Among the sectors, firstly energy, chemical materials, and water industries began to move and they were followed by the service sectors such as retail marketing and telecommunication. Later great companies followed this movement and lastly SMEs began to pay attention to the environment. In the next century, it will be seen that greater companies will shift to the next stage of sustainability and eco-efficiency will become widespread.

On the other hand, enterprises seem to see environmental issues, but they regulate the agenda themselves. Only if the business understands their self benefits, they will make a move about the environment. It is not meaningful and realistic that enterprises start to work against their interests.

Sustainable economy can only be enabled only if sustainable business is created. As Pretty (1998) stated, sustainability can only be achieved by small steps. Even if the enterprises do not follow the firs step, they will, at least, turn to the correct direction which will help them make further progresses.

The following summary of conclusion can be made when the future possible changes between environment and enterprises are examined. When the enterprises' past, current, and future tendencies are examined, we are influenced by their recent attitudes towards the environment. Business is more proactive anymore and they began to set up more positive dialogues and cooperation with the environmentalists.

Three tendencies can be talked about the future:

- Hopeful signals for the future
- Less hopeful signals
- Challenges of the business and environment in the 21st century

Challenges towards the Business and Environment in the 21st Century*

Persuasion of more enterprises for sustainable business, and preference of long term profits to short term profits.

- Engineering in business culture is being changed. For this reason, environmental priorities are found valuable for the business.
- Possibility of success of the business will be increased if eco-productivity and ecological modernization are appropriated.
- Cooperation with government, civil society units, and consumers contribute to sustainability. Plurality understanding accepts that each units of society believe that they have a specific solution for the problems. Consensus is necessary for the success.
- To make aim at technology or adoption of activities in order to reach the targets of the business and society. For example, if the aim is to decrease carbon emission and, at the same time, to meet the social expectations, it should be known that this aim can be realized by the use of fossil fuel or use of internal combustion engines. To realize the same purpose, alternatives of technology and energy which give less damage to environment should be thought.
- Instead of changing everything at once, it is better to work for the sustainability by gradual steps.
- It should be noticed that proactive business ad enterprises which perceives environment as an opportunity are better than the enterprises which only resist and make a move only at the time incidents.

Environment and business is a matured understanding. Explosion of publications about environment, recently, is an indicator of rising concern and interest about the environment.

Less Hopeful Signals*

- Power of keeping on earned benefits, desire of business to continue like every time; there are bosses and affluent people who defender this idea.
- Prevention of environmental agenda by the enterprises; Cosmetic approaches, towards the environmental business problems, may result in ineffective measures and disappointment.
- Increasing negative roles of World Bank and World Trade Organization in prevention of environmental usefulness.

- Whatever the cost, increasing pressure of globalization for profit; this helps business to shift their investments to the countries where the environmental legislation is very weak. Actually, this doesn't eliminate the global burden of environment, but it only shifts environmental pollution to the other regions.
- Hopelessness of developing countries that they can only develop by using cheaper and polluting technology; As a result of this, cities in China, Mexico, and India reached very higher levels of pollution.
- International environmental regulations are ineffective due to national interest blocks, and policies of preventing the application of these regulations by richer and powerful countries.
- With little preventing policies, environmental warming still goes on. Global warming results in melting of polar icebergs rise of inconsistent air conditions, storms, droughts, torrents, and invasion of insects.
- Rise of gap between wealthier and poorer nations; Business is not interested in poor people since they are not good clients and consumers.

Rising and continuing indecision due to wars, ethnic struggles, or crimes;

Hopeful signals for the future*:

- Increase in the number of managers who perceive current environmental messages and put them into practice.
- Increase of environmental inspection; Common environmental reports contributed to the understandings of business which are related with environment that they began to be more careful abut the environmental issues.
- Formation of harder environmental standards; Such as ISO 14000 and obeying the environmental standards.
- Rise of shareholders' pressure; If they want greater shares, they put more pressure on the companies.
- Rising sensitivity of consumers, demands for more green products and more green services; rising environmental education and information mean more informed consumers who don't make mistakes of destroying the environment.
- Rise of membership into environmental civil society organizations, and rise of expertise in the interested enterprises; Nongovernmental organizations gained more experience in their own campaigns.
- Rise of number of political parties who support the greens; by supporting the greens, political parties have opportunity of raising their votes that means possibility of making environmental legislation.
- Success of public-private cooperation in environmental issues, strengthening of relationship between the enterprises and environmentalists. .
- Rise of environmental management associations and environmental occupations which try to include SMEs.

Conclusion

In this period, beginning of the 21st century, there are a lot of important local and global developments such as local environmental problems, adoption of rigid EU environmental acquis. These developments are very important on the individual, business enterprise, and society. Environmental sensitivity of business, which is claimed to be among the greatest reasons of environmental problems, is very remarkable in terms of producing solutions for these environemntal disaters.

It can be said that in the future realtions of environment and business, there will be significant applications that business will redefine some of their intersest in order to protection, revival, and emporement of environment. Moreover, there are hopeful signals about environmantal topics in terms of business' benefits.

In accordance with this fact, in the world and in our country, a lot of enterprises noticed their duties of preserving the environment and they go on to change their views on the natural environment (www.istanbul.edu.tr, 2006).

Alongside with their role in causing environmental problems, businesses have the capacity and ability of both improving the conditions and creating new commercial opportunities. Therefore, the 21st century's business should learn profit maximization and environmental assistance at the same time. Only if business understands their own financial benefits, they will make move for he environment. Recent changes of business' attitudes towards the environment are well known. Enterprises have been more proactive and set up more useful dialogues and cooperation with the environmentalists.

In the next century, greater companies will shift to the next phase of sustainability and eco-efficiency will be expended at a greater extend. Sustainable economy can only be realized by the existence of sustainable enterprises. As Pretty (1998) stated, sustainability can only be achieved by small steps; even if the enterprises do not follow the firs step, they will, at least, turn to the correct direction which will help them make further progresses. In order to increase the number of enterprises which accept sustainability, they should be persuaded to prefer long term interests to short term interests.

Bibliography

Akdoğan, A. (2003). *Çevreye duyarlı yönetim ve işletmecilik.* Kayseri: Kayseri Ticaret Odası Yayınları, no:48.

Aktan, C. (2003). Globalleşme kavramı. [Çevrimiçi] http://www.canaktan.org/yeni-trendler/globallesme/kavram.htm [15.04.2006]

Ay, C., Ecevit, Z. Çevre bilinçli tüketiciler. *Akdeniz Üniversitesi, İ.İ.B.F. Dergisi*, 5(10), 238-264 [Çevrimiçi]
http://www.akdeniz.edu.tr/iibf/yeni/genel/dergi/Sayi10/15Ay.pdf#search=%22%C3%87EVRE%20B%C4%B0L%C4%B0N%C3%87L%C4%B0%20T%C3%9CKET%C4%B0C%C4%B0LER%20%22 [02.10.2006]

Blair, A. & Hitchcock, D. (2001). Environment and business. *Routledge Introductions to the Environment* (paperback ed.) içinde. London: Routledge Publications,

Demirer, G. 2020 yılında dünyada ve Türkiye'de çevre. [Çevrimiçi]
www.metu.edu.tr/~wwwcevre/Yazilar/goksel_demirer.doc [07.09.2006]

Demirer, G. Temiz üretim/kirlilik önleme kavramı ve çevre mühendisliği eğitimi. [Çevrimiçi]
http://www.enve.metu.edu.tr/people/goksel.demirer/temizuretim/doc/B0001.pdf [03.10.2006]

Günsoy, B. (2004). *Küreselleşme ve kalkınma*. Bursa: Ekin Kitabevi.
http://www.epa.sa.gov.au/pdfs/sbes.pdf#search=%22Small%20Business%20Environmental%20Management%20Solution%2 [02.10.2006]
http://www1.oecd.org/publications/e-book/200201VE5.PDF#search=%22OECD%20%C3%A7evre%20y%C3%B6netim%20sistemi%22 [01.10.2006]

Keleş, R., Hamamcı, C. (1998). *Çevrebilim.* (3. baskı). Ankara: İmge Kitabevi.

Louise, C.. (2006). Küresel kazanç eşittir küresel sorumluluk. Lefkoşa. [Çevrimiçi] www.undp-act.org/main/data/ articles/newspaper_supplement_tr.pdf [09.09.2006]

Mazi, F. (2004). İklim değişikliği sorunu ve uluslar arası alanda çözüm arayışları. Mehmet C. Marin, Uğur Yıldırım (Eds.), *Çevre sorunlarına çağdaş yaklaşımlar: -Ekolojik, ekonomik, politik ve yönetimsel perspektifler* içinde, İstanbul: Beta Yayınları.

Mazi, F., Demirci, M. (2004). Biyolojik çeşitliliğin azalmasını etkileyen faktörler ve sonuçları. Mehmet C. Marin, Uğur Yıldırım (Eds.), *Çevre sorunlarına çağdaş yaklaşımlar: Ekolojik, ekonomik, politik ve yönetimsel perspektifler* içinde, İstanbul: Beta Yayınları.

Nemli, E., (2001). Çevreye duyarlı yönetim anlayışı. *İ.Ü.Siyasal Bilgiler Fakültesi Dergisi* October 2000-March 2001 (No: 23-24) [Çevrimiçi]
http://www.istanbul.edu.tr/siyasal/dergi/sayi23-24/17.htm [01.10.2006]

OECD. (2001). *The Development Dimensions of Trade.* Paris.

Ökmen, M. (2004).Politika ve çevre. Mehmet C. Marin, Uğur Yıldırım (Eds.), *Çevre sorunlarına çağdaş yaklaşımlar: Ekolojik, ekonomik, politik ve yönetimsel perspektifler* içinde, İstanbul: Beta Yayınları.

Palabıyık, H. (2004). Uluslar arası ticaret ve çevre: Dünya Ticaret Örgütü üzerine açıklamalar. Mehmet C. Marin, Uğur Yıldırım (Eds.), *Çevre sorunlarına çağdaş yaklaşımlar: Ekolojik, ekonomik, politik ve yönetimsel perspektifler* içinde, İstanbul: Beta Yayınları.

Parlak, B.(2004). Çevre-ekoloji-çevrebilim:Kavramsal bir tartışma. Mehmet C. Marin, Uğur Yıldırım (Eds.), *Çevre sorunlarına çağdaş yaklaşımlar-Ekolojik, ekonomik, politik ve yönetimsel perspektifler* içinde, İstanbul: Beta Yayınları.

Ulusoy, A., Vural, T. (2001). Kentleşmenin sosyo ekonomik etkileri. Belediye Dergisi, 7(2), [Çevrimiçi] http://www.geocities.com/ceteris_tr/ulusoy_vural3.doc [03.10.2006]

Us, A.T. Sürdürülebilir kalkınma yaklaşımı ve işletme politikalarına etkisi. [Çevrimiçi] http://www.kalder.org.tr/preview_content.asp?contID=682&tempID=1&regID=2 , [30.09.2006]
www.ceres.org , [01.10.2006]

THE ROLE OF ENVIRONMENTAL AUDIT FOR THE REINFORCEMENT OF THE ECONOMIC AND ENVIRONMENTAL CONDITIONS OF THE ORGANISATIONS

Maria da CONCEIÇÃO da Costa MARQUES
Master in Accountancy and Business Finance
Lecturer at the Instituto Superior de Contabilidade e Administração de Coimbra
conceicao.m@netcabo.pt / mmarques@iscac.pt

The concern for the environmental protection has gained considerable importance over the last years, becoming a topic of great interest to companies and governments, as well as for the citizens and public opinion in general.

Simultaneous with this phenomenon of increased interest by the society and the authorities, an environmental law was passed in the various countries. In many cases this implied an adaptation effort on the part of the enterprises. In fact, the existing environmental norms have gained a high degree of complexity and non compliance can determine, in some cases, high penalties and/or sanctions.

This phenomenon caused the enterprises to consider environmental issues, becoming very concerned if their activity caused harm to the environment. This awareness led to the necessity of introducing environmental issues in the daily process of decision making.
Thus, the present and future responsibility for environmental issues has become presently indispensable. In this manner a new factor emerges that both enterprises and organisations in general cannot ignore. The aim is to develop an adequate environmental policy that complies with the interests of society in general. On the other hand, this environmental policy can become a strong marketing tool.

The environmental audit emerges as a result of this increasing concern with the environment and the responsibility of the enterprises in these matters. This tool is capable of evaluating and testing the basis of a careful policy on the environmental issue. It is mainly concerned with environmental issues involving the industries and analyses the environmental risks resulting from carrying out certain activities, as well as evaluating the impact these have.
It is therefore essential to develop environmental audits aiming to develop programs that ensure compliance with the present legislation on these issues, in each country, in each sector of the activity, region, etc.

Those enterprises that wish to know and assess their particular situation in relation to the environment carry out these types of audits. These can be internal, carried out by the enterprise, or external, ordered from specialized firms.

The environmental audits are procedures of systematic checks which are recorded permitting to obtain and evaluate the results of the audit objectively, (information that can be checked, in reports or statement of facts), to determine if the Environmental Management System of an enterprise is compatible with the criterion of the audit (policies, practices, procedures or requirements), and to inform the clients of the results of the process. Its adherence is totally voluntary, being a flexible tool whose achievement is determined by the needs and priorities of the enterprise.

In this study, we hope to fit the environmental audit in the environmental management systems of the organisations, emphasize the legal requirement in this matter, check what is being done in this field in Portugal and what benefits for both the enterprises and the environment can result from such an audit.

Introduction

Presently, the environmental performance of any enterprise has become increasingly important for all the concerned. Institutions from various economic sectors concentrate their attention and make efforts that show their commitment to the continuous improvement of the environment, to protect the human health of present and future generations.

The environment is present in all the activities carried out by men, as a factor that conditions it or as a factor that can harmed by such activities. Therefore, presently, no enterprise can remain unaffected by the environmental factor, which will directly influence their business, both by the new legislation, and by the pressure of the consumers and demands of the suppliers and customers. In order to include the environment variable in the enterprise and to ensure that the environment is a competitive factor, it needs an environment management system. Implementation results in various benefits, such as, an improved control and saving in the consumption of raw materials and energy, improved efficiency of the production process, reduction of costs and consequently the decrease of waste.

The system of environmental management permits the creation of new products and markets, based in procedures that respects the environment, promote the reduction of transport, storage and packaging costs, and improve the public image of the enterprise, introducing improvements in the relationship with Public Administration, while at the same time preventing costs associated with environmental damage. They also prevent costs for the recovery of the environment, fines for violation of the legislation and affect the reduction of the insurance premiums for environmental liability.

These are pertinent reasons for the development of a study on the topic Environmental Auditing.

1. Environmental Audit

The environmental audit emerged as the result of an increasing concern over the environmental issue and the role played by the enterprises regarding their responsibility for it. This is a powerful tool, capable of evaluating and setting the basis of a careful policy of with the environment, that takes into account what surrounds the industries. Thus, to analyse the environmental risks resulting from the carrying out of the activity and evaluation of its impact, environmental audits were carried out, not only to meet the legislation in force in each country, activity sector or region but also for those enterprises, who wish to show a good image to the public.

Those enterprises who want to know and assess their environmental position, carry out environmental audits, ordered from specialized organisations. The environmental audit becomes a management instrument that guarantees the correct functioning of the policies on the environment adopted, resulting in advantages both for the enterprise and the environment surrounding it. As a tool, it has become increasingly necessary in business management, when it is important to ensure that the activities carried out by the organisations do not result in the deterioration of the environment.

In many cases, the environmental audit emerges merely to fulfil an obligation resulting from the law in force. But, the audit should know how to bring together the most important goal of the enterprise – to make a profit – with the objective of protecting the environment.
The sustained economic development of the enterprises should be compatible with the conservation of the environment and to achieve this it is essential to get an equilibrium between both. Maybe the main difference between the environmental audit and the other types of audits, is the multidisciplinary character of the first, which permits the joining of efforts of a large number of professionals, such as, Lawyers, Technologists or scientists. The professionals involved should be part of a work team capable of studying the environmental impact caused by the enterprise, making it possible for its organisation and functioning to be adjusted to the norms in force. The tasks to be carried out by this team are the preliminary evaluation, the proper evaluation, the diagnose, the decisions and the proposals. The team of auditors, should be made up of experienced and qualified people, with good knowledge of the environmental norms, the current legislation, the activities, the production and facilities procedures, the existing techniques, the minimization of the impacts, etc. and all those characteristics that the profession of auditor requires, such as, being competitive, honest and objective, amongst others.

1.1 Concept of an environmental audit

Various topics related to the environment, have resulted in Professional services, often called environmental audits, as follows:

- Assessment and contamination of the area;
- Evaluation of the environmental impact of the planned investments;
- Essential environmental audit (audit before buying);
- Reports of the corporate environmental performance;
- Audit to check if the entity is fulfilling the laws and regulations of the environment.

.

However, there are relevant practical and conceptual differences in these services, and to class them all as environmental audits maybe wrong . The term audit has to be limited to those services that can give some sort of guarantee to the users of the audit report. To differentiate between the environmental audit and other services we should be aware of the definition of the audit.

The audit is a management tool, consisting of a systematic evaluation, documented, periodical and objective of the performance of the environmental organisation. Includes the implementation of management, as well the existence of the necessary control teams, to carry out the control of environmental management practices and state the fulfilment of the policies of the enterprise in accordance with the environmental norms.

The standard ISO 14 010, defines the audit as a "Systematic and documented verification process that permits the objective evaluation of the evidence of the audit, considering if the activities, events and the information and standardisation are in accordance with the criterion of the audit with the view to give the results of this process to the applicant."
By doing an environmental audit we aim:

- Determining the standardization of the elements of the Environmental Management System (EMS)[1] with the requirements of the referential system used;
- Determine the efficiency of the EMS implemented to meet the specified goals;
- Identify the opportunity to improve;
- Verify the legal compliance;
- Accept EMS by external entities (certification).

The environmental audits are distinguished by:

- They are carried out with objectivity, independence and through a systematic approach;
- This constitutes an effective management tool to examine the activities and procedures – the results are used as input to be revised by management;
- They are carried out by auditing teams with the necessary competencies to perform them;
- They are performed by teams of auditors who act according to a code of ethics;
- They are planned, ensuring that they are carried out in a consistent manner and yield trusting the results;
- Set goals and a clearly defined scope;
- They are carried out considering agreed criterion.

[1] In point 4 we use also the abbreviation EMS, for the same expression in english.

What is an audit	What is not an audit
A systematic and documented checking procedure that permits the measuring of: - the conformity with the specified requisites; - the adequateness of the procedures and efficiency of its implementation.	- An inspection; - A technical opinion; - An environmental diagnose; - A control; - A disguised vigilance; - A time to "settle differences".

Source: adapted from AEP (2005)

1.2 Advantages of the environmental audit

The environmental audit gives the company certain advantages. One of the benefits that can result from carrying out this audit is an improved yield from the resources of the business, consequently, an increase in the savings. Another benefit is the possibility of using valuable environmental information when making decisions on the environmental impact, in a course of applying a new strategy. In the same manner, for any emergency situation that can emerge, there is support information that is secure and efficient, able to guide the efforts in the right direction. It assists both the managers and the employees to know the environmental situation and policy of the business.

This is possible thanks to the preparation of a final report, a document which is given to the management who will use it as an internal control tool. This information, can be used by all the employees, by the corresponding official organisations, and in general by any interested person who wishes to know more about the environmental situation of the enterprise.

1.3 Aims of the environmental audit

The general basic aim of this kind audit is to make the enterprises obey the current legislation on the environment. This is one of the main problems facing the industries, when they decide to ask for technical assistance to resolve a conflict, when they do not meet the requirements of the norms. In these cases, once the necessary research is carried out and a report is made of each situation in particular, an audit should be able to provide the information to solve situation. The audit should ensure that norms will not be violated again, by preparing a special action plan for the organisation. This implies a good knowledge of the national, sector, territorial, community, and international legislation, etc. which will give the enterprise the legal coverage it requires.

On the other hand, from a technical point of view and taking the degree of complexity into account, the audit should be able to check if the situation requires the best technology available. This implies that the auditing team has the necessary knowledge and means to guarantee this credibility and viability, or if it is necessary to get specialists in each area.
At the stage of fixing goals it is important to do this from an economic point of view by adjusting the project to the needs of the enterprise. Alternative projects can be shown, just as in other audits, with different costs, in order to meet the legal requirements, that can improve technologically, with greater investments in the future.

Subsequently, we can show specific goals covering different areas or departments, such as the development of plans of integration of the employees within the general goals, so that the importance of the topic in question and the need to fulfil the set goals is understood.

In this sense the continuous information should be considered a priority, through recycling by providing courses, seminars, conferences, is crucial to obtain an efficient performance, On the other hand the possibility of getting the co-operation from other enterprises, defining which enterprises to consider and to what degree or measure will such co-operation be set. Besides making the required contacts (example, Legal advisors, economic and financial advisors, etc.) there should be the support of an integrated management system, and an adequate computer programme to facilitate the audit.

2. Types of environmental audits

Depending on the goals to be achieved, it is possible to differentiate between the different types of environmental audits. Although it is true that the environmental management audit is at present part of the general policy of the enterprise, there are other types of audits that depend on specific situations or concerns. The main characteristic of the audits they provide a static image of the enterprise, limited in space and time to certain areas of its activities.

2.1 Audits of compliance and responsibility

Its aim is to prove that the functioning of the enterprise meets all the environmental norms in force. The emphasis is on the legal aspects related with the topic. This type of audit, of a defensive type, serves as a tool of coverage of responsibilities passed (audits of disasters or accidents), present (audits of the administration or liability), and future (audit of risks).

Audit of disasters or accidents. The audit is done as a consequence of a specific circumstance, like a disaster a catastrophe or accident, with the aim to determine the cause and establish responsibility, as well as to find solutions that will prevent such an occurrence from happening again in the future, independently of the legal, penal or civil process, simultaneously started by the corresponding authorities. The enterprise, will then have the audit as an instrument of defence.

Audit of the administration. It is a study of the civil or penal liability of the functioning of the enterprise in relation to the environment.

Audit of the Liability. The aim is to know and limit the environmental risks; this may mean trying to decrease the possible legal and economic risks that may threaten the enterprise. The characteristic of this audit is that it is more dynamic than the previous ones, seeing that it becomes an evaluation tool of the possible risks and to decide on the type of management or strategy to prevent these risks.

2.2 Audits of the Operations

These audits show an increased dynamic than the previous ones, besides considering the potential liability, it also considers the technical and legal solutions of environmental protection, the costs, investments and its advantages. They relate liability with management decision. These audits are aimed at preparing an operation, an activity or an investment.

These are as follows:
Audit to buy an enterprise. A verification audit maybe requested in the cases of a concentration of businesses. Normally, the involved businesses in this process wish to find out all possible environmental risks resulting from these types of processes. The same occurs when buying or acquiring. The enterprises ensure, through an audit, the probable risks and future liabilities they may have when acquiring enterprises that can potentially cause contamination.

Audit of the area and site. In the case of creating and building an industry, the audit will centre of the analysis on the geographical, hydrological situation and economic conditions amongst others, trying to see the effect of the Project on the environment, with the aim to decrease the possible impact and adapt the enterprise to the legal aspects. These are audits on specific aspects, trying to gauge its effect on the environment, for example when creating a new industry.

Audit of the environmental impact of manufactured products. Consists in a partial diagnose of a certain aspect of the industrial or commercial activity of the enterprise, in relation to the environment. Some of these aspects deal with the analysis of the risks for the environment, resulting from the use of a certain materials or residues. It also analyses the effects caused by the launching of a new product or carrying out a certain activity, as well as the impact of the production or commercialising a specific product, on the environment.

Management Audit. This includes the general development of the topic of the environment in the enterprise, aimed at knowing and assessing if the effects resulting from a true policy of the materials is in accordance with the rest of the principles managing the activity of the enterprise. The environmental policy should be assessed in a continuous manner and be subject to the necessary alterations, according to the evolution required. In this case, this means a global analysis of the environmental situation of the enterprise and its activity.
This type of audit, contrary to previous ones, is not limited to examining potential sources, or risks connected with the functioning of the facility. It is a periodic information tool, and an organisation management instrument, considering its adjustment to the internal organisation, according to the impact of the activities performed.

These audits are generally described as:

External Audits (from second or third part). The second part audits are the ones carried by the interested party, (for example, and organisation may carry out an audit on a supplier regarding his environmental performance). The third part audit are those carried out by an external independent entity, such as, certification audits carried our by the certifying entity, that assure the recognition of the Environmental Management Systems.

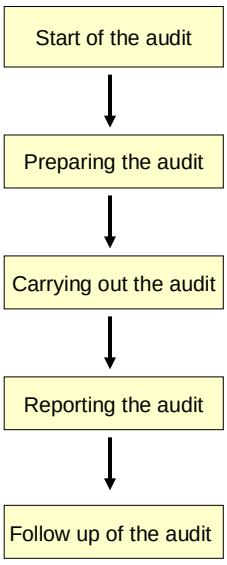
Internal Audits (of the first part). The internal audits or of the first part, are carried out using external resources (for example, consultants) and measure strong points and opportunities for improvement in relation to procedures, methods and/or external norms adopted. The internal audits, check if the activities of an organisation, in practice, are in accordance with the established procedures, identify possible problems related with those procedures and check the opportunities to improve.

The period of time required to complete the audits of all activities is called the *audit cycle.* This varies according to the size and complexity of the organisations.

The scope of the internal audits can change from the auditing of a simple procedure to the auditing of complex activities.

The internal audits should be carried out by sufficiently independent persons in relation to the activities to be audited, to assure an objective opinion. These audits can be carried out by internal human resources (assistants) or external to the organisation (collaborators from other organisations or consultants).

The Picture below shows the phases of an internal audit.



Source: adapted from APE (2005)

2.3 Participants in the Audit process

In an environmental audit there are three intervenients:

- *The Audit Client.* The audit client is the one who orders the audit, it can be a person or an organisation, to whom the final report is given.
- *The Auditor.* The auditor is the one who plans and carries out the audit (he can be independent, or belong to an organisation), with the duty to establish the requisites according to the needs set by the client and evaluate the compliance based on objective evidence.

- *The Audited*. The audited is a person or enterprise whose Environmental Management System is being assessed, whose co-operation with the auditors greatly influences the good development of the audit.

The auditing team should have a high level of the technical knowledge, personal attitudes, independence, objectivity, to guarantee the quality of the audit. Within the audit team, prominence is given to the Chief auditor, who has to ensure that the audit is done well, and is responsible for complying with the aims set, within the audit plans approved by the client.

2.4 Legal Framework

In Portugal, the legal frameworks to consider (national and European) are many, such as:

- Basic Environmental Law (Law No. 11/87, of 7 April);
- Law Decree No. 69/2003 of 10-04-2003: norms for carrying out an industrial activity;
- Law Decree No. 516/99 of 02-12-1999: strategic management plan of industrial waste;
- Decision of the Commission No. 2003/241/CE of 26-03-2003: prevention and integrated control of pollution;
- Regulation of the Council No. 1836/93/CEE of 29-06-1993: Generalities and programmes that allow for the voluntary participation of the enterprises of the industrial sector in a system of eco management and auditing; Amongst others the relevance for its work on a daily basis!

The standard ISO 19 011 ("Guidelines on Quality and Environmental Management System Auditing") is a joint version of the reference norm concerning Audits and Environmental Management Systems and Quality Assurance Systems. This norm is in place of parts 1,2 and 3 of ISSO 10011 and the norms ISSO 14010, 14011 and 14012.

2.5 Entities that carry out audits and certifications

The Certification of the Systems is a specific process of Management System Audits which is carried out by an accredited independent third party . They can issue certificates:

- The Certification Organisations Accredited by the Portuguese System of Quality for the ISSO 14001:
  - APCER- Portuguese Association of Certification;
  - SGS ICS- International Certification Services, Lda;
  - BVQI Portugal – Certification of Products and Systems - Sociedade Unipessoal, Lda.
- Internationally accredited entities, such as listed below, amongst others:
  - DNV - Det Norske Veritas
  - LRQA - Lloyd's Register Quality Assurance.

3. Stages of the Environmental Audit

To carry out and environmental audit certain there are certain stages. These can change according to the type of audit, the goals set or the situation and / or characteristics of the enterprise.

A pre audit or an early diagnose corresponds to the first stage of the audit, known as early diagnose. Its a preparation for the audit and serves to minimise the time and the costs, as well as maximising the productivity of the audit team.

In this stage, the activities and definition of goals are considered. The mission is defined, the goals achieved, the criterion and priorities are selected and the method is set, all depending on the kind of audit that is going to be done. The planning and decisions taken have to do with the type of audit. The preparation of an audit plan is started, defining its scope (technical, temporal, geographic, etc.), the identification of information sources and questionnaire management, to the discussion of the auditing programme and the setting of priorities. The assessment criterion are also chosen.

The selection of the audit team and the setting its tasks and responsibilities, as well as proving their competence and qualities, is also done at this stage. In this stage the co-operation of the enterprise is essential, to facilitate the collection of information requested at conversations, interviews, documents, questionnaires, etc., to allow for the preparation of an early diagnose.
It is also the stage where the depth and scope of the audit and the level of detail required to gain time and resources, is defined. The scope of the audit depends on factors such as type of audit, the available time, the size of the business, the complexity of its processes, the human and economic resources, etc.

Regarding the information sources selected, these are mainly general information about the business, access and authorizations, documents of the entity, description of the procedures and identification of emissions, and production of waste and emissions as well as the management of waste.

From this data we questionnaires are prepared. These are for the technical, scientific, administrative and production staff, etc. from which we hope to get answers that we will give a true knowledge of the business, its production system, the mechanisms of internal control and how will the tasks and responsibilities be affected. In this way a plan for the Environmental Audit can be prepared.

The audit programme should have clear goals and priorities, such as the revision of the previous audit plan, the environmental management plan (if available), the revision of the local, national or international environmental norms.
The revision of the installation plans, the revision of the procedure maps, acquisition of copies of the accesses, authorizations and plans, the identification of the sources of emissions, the type of emissions, the type of treatment, storage or disposal of waste, are issues to be considered at this stage.

Lastly deciding on who should carry out this work, considering the characteristics of experts in this field. We should assess if the person has enough technical knowledge, objectivity, honesty, competence, experience, capability to communicate and dialogue, etc.
After processing this information, the *carrying out of the audit* requires that an analysis be made of the awareness of the environmental situation of the enterprise. In an environmental audit the following steps are followed:

- Identification of the activities, were we can more a less see what we have to do;
- Carrying out of the audit, setting goals, methodologies to be used, analysis and treatment of the information collected, study of the strong and weak points of the enterprise, collection of evidence, evaluation of the evidence and preparation of a first report, as well the summary and conclusions of the audit.
- The Techniques used in the audit are varied, and their choice depends, in general on the type of audit, with the auditor being responsible for this choice, which will be taken based on the information collected in the pre-audit stage.

The *Post-Audit* coincides with the preparation of a final report, presentation of the results, comparison, checking the present legislation, conclusions and proposals recommendations and corrective measures.

4. The Ecomanagement and Audit System and its application to the Public Sector

4.1 The EMAS and the Public Sector Organisations

The aim of the Ecomanagement and Audit System (EMAS)[2] consists in promoting the ongoing conservation of the environment. It is a voluntary system for those businesses interested in assessing and improving their environmental performance. The system was launched in April 1995, and was revised in 2001 to become integrated in the Norm ISSO 14001 (International/European Norm for the Environment Management Systems), as part of the Envrironmental Management System. The EMAS goes beyond the norm ISO/EN ISO 14001 in many aspects. The systems requires that the organisations carry out a preliminary survey of the environment; get their staff to actively take part in the application of the EMAS and make available to the public and other parties the pertinent information (CE 2005).
This is a voluntary tool aimed at the organisations who wish to assess and improve their environmental behaviour and inform the public and the other parties[3] of their performance and intentions concerning the environment, not just merely obeying the existing national and European Community Environmental Legislation.

[2] O *Eco-Management and Audit Scheme* was establisheb by Regulation (CEE) nº 1836/93, of 29 June, defining the responsibilities of the Member States in the creation of structures based on the EMS, the functioning and operational conditions of those structures, as well as the requirements to join the system. In 2001 the new regulations of the EMS (EMS II) was published, established by the Regulation (CE) nº 761/2001 of the European Parliament and the Council, of 19 de Març 2001, revoking the first one.
[3] Nowadays we use the term "Stakeholders" to designate all interested parties from the organisations.

The EMAS is available for all public and private sector organisations, who wish to improve their environmental performance. It is open to Member States of the European Union and of the European Economic Area (Norway, Iceland and Liechtenstein). In the framework of the preparation to join the European Union (EU), and increasing number of candidate countries equally apply the system.

For the authorities of the public sector there are benefits for using the EMAS, since the EMAS is now revised and open to all types of organisation, including the authorities of the public sector, involving many benefits for the participants. The structure of the EMAS allows for a flexible approach of the registration, permitting the individual authorities of the public sector services to register. Since 1993, the authorities of the public sector of various Member States of the EU have been able to register. Presently there are over 120 registrations from local authorities in these countries[4].

With the EMAS, the organisations can comply with the national and international legislation, obtain savings from the reduction of waste, energy savings and better use of resources[5], better management control by the authority and reduction of the environmental liability[6], show the staff and clients a commitment to environmental conservation, integrate principles of sustainable development[7] in exercising authority, in accordance with the Local Agenda 21[8].

For the success of the EMS programme, the commitment of all the management is important, and this can be achieved in various ways: pointing out the benefits, especially the savings in costs, the fulfilling of the regulations, and improved management control and political responsibility, showing management the enthusiasm of the staff about the system, and using real case studies of similar authorities who got EMS. Once achieved, it should be well advertised, so that the staff are encouraged to participate.

The EMS allows for the registration of individual sections, which allows the organisations to manage the EMS in a set place. In the United Kingdom, the public sector authorities were able to register on a basis of services, which allows for even more flexibility.

[4] In 2004, Portugal almost duplicated the registration of its organisations (+91%), followed by Italy (+50%) and by Spain (+31%). Of the 396 new organisations registered in 2004, 107 are from Spain and 92 from Italy. Four organisations who registered since the emergence of the EMS are out of the ten Member States: the Chech Republic, Slovenia, and Republic of Malta.
[5] Eg. In Leicester a 10% reduction in the consumption of water was found.
[6] Eg. In the Stroud District a reduction of 36.5% in the emissions of CO2 was found from 1995/6.
[7] *Sustainable Development* is the one that considers the present needs without compromising the needs of future generations to meet their own needs.

[8] The establishment of the procedure known as **Agenda Local 21**, is based on political conditions and definitions. These are determined by two factors. Firstly the increase usage, on an increased rate, of the natural resources, the bad management of the same, and due a previous almost non existent concern by the society as a whole to reduce waste. Secondly due to pressure, sometimes silent, but very often not, of citizens who are increasingly aware and who through their votes condition the behaviour of their leaders..

4.2 The registration in the EMS

In the scope of the *environmental policy*, four essential elements are necessary, for the registration:

- Commitment to comply with all the regulation demands applicable;
- Commitment for continuous improvement;
- Creating a framework for the definition and revision of the environmental aims and goals;
- Need to openly communicate to all the interested parties:

There are *different approaches* to the development of an environmental policy, namely:

- Organising seminars for opinion makers;
- Analyse the policies of other authorities;
- Carry out brainstorming sessions on the key topics and environmental effects;
- Establish priorities;
- Guarantee that the policy is adapted to the audience it is aimed at.

It is essential to do a *preliminary survey* to evaluate the elements of the activities of the organisation in terms of environmental effects. The survey should include the legal requirements, regulations and other environmental aspects; evaluation criterion of the identified aspects; environmental practices and procedures; past incidents, for example complaints, reactions, accidents that have caused or may have caused effects in the environment.
The majority of the authorities of the public sector, independently of its dimension, place or nationality, show similar environmental aspects, since they have similar tasks and activities. In the following table some of the most common aspects are listed. The listed items maybe used as a starting point in the identification of those aspects.

Direct Aspects	Indirect Aspects
Energy consumption	Suppliers & contracting party
Water consumption	Effects and policies
Use of transport	Planning Decisions
Acquisitions	Subsidies and Loans
Solid waste	Investments
Soil Maintenance	
Visual and acoustic aspects	

Based on the environmental aspects defined above, a *programme* maybe created for the management of environmental aspects and pollution control. The programme should have a co-ordinator to work and administer the programme, and the staff should participate actively. They should have targets and a plan that includes activities, indicators, goals, timings, responsibilities and the effects of the resources on the environment.

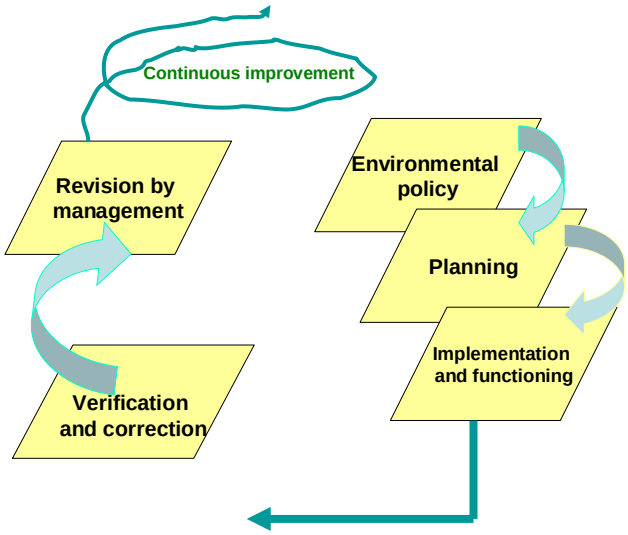
Like any environmental programme, in the public sector the active participation of the staff should be promoted, this being a fundamental demand of the EMS. To encourage the staff to take part, we indicate some key ideas, supported by the European Union:
• Constitution of the environmental committee;
• Availability of a suggestion book/box for ideas and improvements;
• Training availability – for example: group work, making aware;
• Representatives or Environmental "champions".

The *environmental management system* (EMS[9]) is another essential component for the EMS. A EMS will include as elements the organisational structure, the work practices, the expected activities, the resources, the responsibilities and the control of the documentation.

To monitor the EMS and the performance data it is necessary to carry out audits before the EMS registration. The audit cycle should not be more than 3 years, but can be carried out either internally or externally, as long as the auditors are independent of the elements that are being audited.

We should promote the preparation of an *Environmental Declaration* that should be validated in an independent manner by someone competent and be available for consultation by the general public. This declaration should be specifically in accordance with the existing norms, namely regarding the contents, which includes political aspects, a summary of the EMS and data concerning the performance and the aims.
The final stage of the EMS process consists in the *verification***,** that should be done by a competent inspector and include a visit *in loco.*

Environmental Management System



Fonte: Dramb (2005)

[9] Environmental Management System.

Conclusions

Over the last years we have noted a considerable increase in society's concern with environmental issues. This increase in social awareness is fed by scientific evidence that show the damage to the environment, generated by the human activity and that has global repercussions in the world and cannot be seen as a local affair.

A lot of legislation has been passed on the environment which is reflected directly in the industry and contributes for business to recognises the importance of considering the environmental aspects as an essential to survival and entrepreneurial success. So that the activities of a business may lead to the achievement of improvement in environmental matters, they need to be included in a System of Environmental Management, structured and integrated with the other activities of management.

The Environmental Management System should set the goals and the adequate environmental goals and establish the structure and the programme which will allow the achievement of those targets and goals, which should be set annually, according to the environmental policy of the organisation.
The internal audit proves periodically that the environmental management system meets the set plans and is up to date. The revision by management is carried out with the aim of showing continuous improvement and efficiency and adequacy and efficiency of the implemented system.

For the public sector organisation there are important benefits of the use of EMAS. This system was revised and is now open to all kinds of organisations, private and public. For the public entities there are advantages in registering, because they can make savings with the reduction of waste, save energy, use less resources, improve management control, reduce the environmental responsibility, while at the same time show the staff and to the clients a commitment to environmental conservation.

Bibliography

Associação Empresarial de Portugal (2005). Ambiente e Energia. www.aeportugal.pt. (Fevereiro de 2005).

Buchholz, Rogene A. (1998). *Principles of Environmental Management* (Second Edition). Prentice Hall. New Jersey.

Comissão Europeia (2005). Direcção Geral do Ambiente. www.europa.eu.int/comm/environment/emas/index/htm. (Fevereiro 2005).
Dramb – Direcção Regional do Ambiente (2005). Certificações ambientais. www.sra.pt (Março de 2005.

Freedman, Martin & Jaggi, Bikki (2000). *Advances in Environmental Accounting & Management* . JAI – An Imprint of Elsevier Science. New York.
Marques de Almeida, J.J. e Costa Marques, M.C. (2002). *La Gestión Medioambiental e Su Auditoría*. Partida Doble Nº 143 (España).

Principios de Contabilidad de Gestión (1999). *Contabilidad de Gestión Medioambiental* – Documento nº 13. Asociación Española de Contabilidad y Administración de Empresas – AECA. Madrid.

Taylor, B; Hutchinson; C.; Pollack S. & Tapper, R**.** (1994). *The Environmental Management Handbook*. Pitman Publishing. London.
www.google.pt (Março de 2005).

ENVIRONMENTAL COMMUNICATION AS A REDEFINING POSSIBILITY

Pernille ALMLUND
Department of Communication, Business and Information Technologies
Roskilde University Post box 260 DK-4000 Roskilde, DENMARK
almlund@ruc.dk

This paper builds on one meticulous case study of one large enterprise and one more extensive case study of one enterprise both placed in Denmark. The study focuses on environmental communication taking place in the daily working routines. Data is produced through face-to-face and in-dept interviews, both with individual employees, employers and focus groups, and each lasted one to two hours. Secondly, following employees during full days work and participation in meetings, data are produced through participant observations of how the environmental communication actually took place. The investigation is a very close observation of environmental communication and give an insight in the understanding of environmental issues taken for granted and shows which interests are threats to the further environmental concern. This understanding will be indispensable in the further planning of strategic communication process, when it comes to finding the discrepancy in interests.

Introduction

In the search of redefining interests from typically a strong economically focus to a more environmentally friendly focus and to convince employers and stakeholders about the environmental issue and initiatives, many environmental managers find communication a very useful tool. However my case study in the enterprises shows that the environmental managers do not have any communicational background and therefore easily focus on a traditional concept of one-way communication in journalism and professional communication management. Hence, the environmental managers try to convince the employees instead of collaborate with them and they simplify the messages rather than explaining the issues properly. They also define narrow target groups among employees rather than searching for barriers in the organisation as a whole, including managers and the environmental management.

This makes it very relevant to see if and how another communicative approach can be strategic and helpful in the redefinition of interests in enterprises when it comes to environmental issues. This underline the relevance of the posed question in focus of this particular paper: *How can environmental communication promote a redefinition of interests in enterprises?* And bring some new aspects of communication in combination with environmental issues.

In the search of answering that question the main point will be that we need a more analytical concept of communication than the traditional understanding of communication as a tool to convince different target groups about specific messages. With this analytic quality of the concept we get a very good and close insight in the understanding of environmental issues in the enterprises. This insight is the founding possibility of redefining interests because this is the insight that is needed for the internal reflection in the enterprises

Thus in this particular study the concept of communication includes both planned and spontaneous communication including small talk in the corridor, information at meetings, research interview etc. Understanding communication in this way includes not only the type of communication which communication managers take into account, but all aspects of communication and in this context, all communication on environmental issues in the enterprise as a whole. By thus broadening the concept of communication, enables a deeper and closer investigation of environmental communication. With some theoretical inspirations this is a way to make it a more analytical concept.

To analyse the posed question, I will first make a brief presentation of the enterprises and their use and understanding of communication. After that I will argue for a redefining of the concept of communication which leads me to the presentation of some of the theoretical inspirations and reflections. After the theoretical considerations I will present the analytical frame and some more methodological considerations. As the central part of the paper I will present the meticulous case study and thereby show the use of the analytical concept of communication or in this context the concept of environmental communication. Finally I will try to answer the posed research question in some concluding remarks.

Using communication in the effort to take environmental issues in to consideration

In the enterprise named Bendixen[10] the environmental manager tried very hard to convince different groups of employees to implement more environmentally friendly routines and chemicals in their daily work. He met a lot of resistance but had the idea that some support from a communication expert could give the results he wanted. His proposal was to let this communicational skilled person find the best way to convince the leaders of the decentralized laundry to use a specific recipe of soap which was friendlier to the environment.

Bendixen is one of the Europe's leading textile service companies covering laundry work and rental services of textiles and articles of hygiene. Historically Bendixen has expanded its activity in Denmark by buying up small laundries around the country, but with independent management in some area. For some of these independent laundries that meant business as usual but based on a whole lot of experience in this type of industry. It was here the environmental manager met resistance to use the environmentally friendly recipe of soap due to good experience with the recipe usually used. The usually used recipe may by the way have been developed through a long time and with the involvement of both personal and economically resources.

In the enterprise named Ecosoap the environmental manager tried to find out how to implement an environmental concern in the whole company and how to use the company's (read; the environmental mangers) know how and ISO 14001 certification in the sale and in a more collaborating strategy with large costumers and in the daily routine of sale. In Ecosoap's way of organising sale and marketing the advisory salespersons play a very important role as they are the persons who have the daily contact to the costumers. From this point of view he had an intention to find out why the advisory salespersons did not give much attention to the environmental issues, the environmentally friendly products and the ISO 14001 certification in their daily relation to the costumers and how this could be given a higher priority.

The real names of the enterprises are replaced by others.

Ecosoap is one of the worlds leading providers of cleaning, food safety and health protection products and services for the foodservice, healthcare and industrial markets covering both the production of chemicals and development of cleaning solutions. It is an American owned company, but the role of the environmental manager is a solely European concern with the job placed in the Danish enterprise. The environmental mangers intentions to raise the salespersons priority of environmental concerns were first and foremost a concern in the Danish context and had its focus on the salespersons and not on what constitute their work and priorities.

These examples show how the one environmental manager very easily think communication as a tool to convince specific target groups and how both the environmental managers by the selection of target groups have pointed out who are the problem for further environmental concern. Certainly this gives a unique opportunity to narrow and well defined problems, like: *How can the environmental manager promote the advisory salespersons to work more intentionally with environmental issues in their practice of selling?* Or *how can the environmental manager convince the leaders of the decentralized laundry to use the environmentally friendly recipe of soap in their laundry?*

Even narrow and well defined problems might not be easily solved and more important they might not have raised attention to the most important barriers of the further environmental concern. They were identified beforehand and without any foundation in the organisational practice. For such a foundation we have to search another concept of communication and we have to displace the problems and questions raised.

Redefining the concept of communication

It becomes obvious that this traditional understanding of communication is biased through a very strong focus on specific target groups and in its efforts to convince specific employees. At the same time it becomes clear that communication is understood primarily as a planned process.

The traditional concept of communication is defined as a transmission from a sender to a receiver, and has a strong focus on the individuals taking part in the communicational process. In the effort to describe and be able to plan the communicational process, the information flow has been tried modelled in several ways from Shannon and Weaver's to Jakobson's communication models. (Fiske 1990) This is a quite simple and basic explanation of these thoughts but will however be sufficient because it is very much these basic thoughts of communication the environmental managers take into account.

However, in the search of another concept of communication founded in the organisational practice we have to take away the attention to specific groups or individuals as this application already from the beginning has pointed out who is the problem for further environmental concern instead of exploring where the problem or problems are. Furthermore, we have to broaden the concept of communication to cover both planned and spontaneous communication as this will give attention to the concept of communication as an analytical concept instead of being solely a planning process of appropriate and convincing communication. This means that a broader concept of communication could include information material, speeches, reports etc. as types of planned communication and small talk in the corridor, information at meetings, research interview etc. as types of the more spontaneous communication.

In the search of such a more analytical, broader and non-individual concept of communication Niklas Luhmanns theory of Social Systems has been a source of inspiration and in the effort to base the analysis in the organisational practice the study draws on the theoretical work of Pierre Bourdieu.

Communication as an analytical concept - Theoretical inspirations

From Niklas Luhmanns theory of Social Systems the study draws on his concept of communication and his concept of observation. In Luhmanian terms to observe is to draw a distinction between what is marked and what is unmarked. This means that when something is indicated or marked, something else will be excluded or unmarked. In that sense to observe is to draw a distinction and the observation is the unit of the distinction. The marked side of the distinction is thus inseparably linked with the unmarked side, but the observer does only observe the marked side and what is included in the observation and is not able to see neither what is excluded nor the unit of the distinction in the moment where the observation takes place. Every observation is in that sense based on a blind spot. (Kneer and Nassehi 1997; Luhmann 1997; Thyssen 1997)

In time it is possible for the observer to cross the boarder of distinction and see what became unmarked in the first observation. This kind of observation is by Luhmann called second order observation. First order observation is the observation and thus the indication of something in the world, where second order observation is observation of observations. First and second order observation is based on common condition and do both produce blind spots in their operation of observation. The only difference in between is that a first order observation does not know about the blind spot whereas it is well known for the second order observation. (Luhmann 1993; Luhmann 1995; Åkerstrøm Andersen, 1999)

To observe observations is to observe communication in the Luhmanian world of concepts. Communication constitutes Social Systems and includes speaking, writing and gesticulating. In that sense communication should be observed when we need to know about what's going on in the society. From this follows that communication by Luhmann is neither communicational actions nor a transmission from a sender to a receiver. In Luhmann's definition communication is a process of selection covering a synthesis of three selections: 1. the selection of information, 2. the selection of how to inform and 3. the selection of understanding.

Communication will not be a reality until all three selections have taken place. The third selection does not refer to the reception of a receiver but should be understood as the further communication by the connection to the message. From this follows that only communication is able to communicate and communication is not communication between individuals. (Luhmann 2000)

In this way Luhmanns concept of communication is a non-individual concept of communication, which dissociates itself from the idea of intersubjectivity. As the constituter of Social Systems covering speaking, writing and gesticulation and as available for observation, this concept of communication includes all types of communication and becomes that kind of analytical concept, we were searching for. However, such a broadly covering concept of communication demands a thematic delimitation of the communication intended to observe and is in this particular study the communication about environmental issues or better named; environmental communication in enterprises.

Not to get lost in an absolutely epistemological approach, the study is furthermore based on the concept of practice, as it is launched by Pierre Bourdieu in his theory of practice. (Bourdieu 1977) The concept of practice is used in the sense of organisational practice and should be seen as a supplement to the concept of communication inspired from the system theory of Luhmann. This means that I see communication as an organisational practice founded in the context which is understood as experience, history, language, structures etc. for the enterprise. Communication is an excellent object of observation and might be the only or most available object of observation, but as I see it communication is bounded upon the context, hence the observation of communication will also be an insight in the context. Very important in this connection is to pinpoint that we - following Bourdieu - will never be able to have the full insight in the context as the theoretical practice will always only be an approximation to the practical practice. (Callewaert 1997-1998) This demands a quite humble position of the researcher when it comes to the conclusions of the investigations.

The reason why I combine the theories of Pierre Bourdieu and Niklas Luhmann is that I find Luhmann's concepts of communication and observation very fruitful in the exploration of this field of environmental communication, but that he by his exclusively epistemological focus lacks some of the ontological elements as we find it in the theoretical thoughts of Bourdieu. A full explanation of the ontological understanding in this particular study will be far too excessive in this kind of paper. Never the less it will be important to mention, that the understanding of ontology besides the inspiration from Pierre Bourdieu draws on the phenomenology of Martin Heidegger[11] and that the phenomenology of Martin Heidegger has provided the scientific argument for the coupling of Niklas Luhmann and Pierre Bourdieu.

A very important similarity between Pierre Bourdieu, Niklas Luhmann and Martin Heidegger is their questioning of what is taken for granted. By Bourdieu this is pointed out in his searching behind categories; where he never takes any category for given, but asks how the category appeared. (Bourdieu 1997) In the ideas of Heidegger we find a similar consideration by his questioning all a priories and further by his differentiation between curiosity and wondering.

Even if you would never call the phenomenology of Heidegger epistemologic, it was neither ontologic in a traditional sense of ontology.

Heidegger described curiosity as having an interest in knowing as much as possible, but solely to have known it, whereas wondering is to pose question to what we do not understand and let the wonder take a place in the search of understanding of the phenomenon. (Heidegger 1994; Løgstrup 1996) By curiosity it is not possible to question what is taken for granted, only by wondering this is a possibility.

In the theoretical works of Luhmann we find this questioning possibility in his concept of first and second order observation. Where the first order observation do take the observation for granted, the second order observation observes what is taken for granted and thereby reveals what can be questioned. (Kneer and Nassehi 1997; Luhmann 1997; Åkerstrøm Andersen 1999)

Posing this type of wondering question is an orientation to pose the questions of "how" and not the questions of "why". It is a search of how the environment is handled as it is and how it is understood in the enterprise and is not a question of why the environment is understood or handled as it is. It is not a search of final solutions, but an attempt to let the wondering question be an opportunity to reflexion within the enterprises. In that sense the observation of environmental communication and the wondering question is an attempt to let the interests be redefined within the enterprises and by themselves and solely based on the questioning of own practice.

This means that an identification of a problem never calls for a final solution. Instead of that it calls for a displacing of the question, but always founded in the actual practice. This is why the posing of wondering questions with advantages could be part of the continuous practice. Michel Foucault describes the process this way:

"What is the answer of the question?
The Problem.
How can the problem be solved?
By displacing the question." [12](Foucault 2001)

How to find observable environmental communication - methodological considerations
Looking at the question posed by the environmental manager in Ecosoap it obviously becomes necessary to displace it, if we want to open up the context in stead of pointing out who is the problem and find specific solutions to handle this problem. The question could then be displaced by questions like: *How are environment and environmental issues understood in the organizational practice?* And *How is it a problem to prioritize environmentally concerns higher in the enterprise as a whole?* These questions are open and do not place the responsibility of the problem from the beginning. By this quality the questions becomes the opening of further exploration in the enterprise as a whole.

This study is based on an analytical strategic approach, which should be understood as the researcher's construction and delimitation of the object in focus. In this understanding a method could never be the limiting factor of the outcome, as the method is never chosen beforehand, but is chosen in collaboration with the strategy.

[12] Quotation is a translation from the Danish edition, which can be found in the list of references.

This means that a method or more methods are chosen in their quality of making the object of observation available. In this study it means methods, which could produce and observe internal environmental communication in enterprises.

With the intention of observing environmental communication in Ecosoap, data was produced through face-to-face and in-dept interviews, both with individual advisory salespersons, the different kinds of managers and focus groups among the advisory salespersons, and each lasted one to two hours. Secondly, following the advisory salespersons during full days work and participation in what they call sales meetings, data were produced through participant observations of how the environmental communication actually took place. All transcriptions of interviews and all notes from the participant observations were in that sense observed as observable environmental communication. Further the informational material about environmental issues and environmentally marked products were observed and analysed as environmental communication.

Analyzing the environmental communication in the enterprise

As an observer of the environmental communication and in search of an answer to the question *how are environment and environmental issues understood in the organizational practice?* I was led by the distinction environment / not environment which means what is on the one side marked as environment and what is on the other side not marked as environment. In the search of the understanding of environment in the enterprise it is important to note that environment should be understood as a concept and not as a fully defined unity. In Luhmanian terms a concept is given meaning by the context and could be given meaning in lots of different ways. In this understanding a concept is limited by its counter concept. Because of that the counter concept of environment in the specific enterprise were searched in the communication. Furthermore, this distinction between concept and counter concept was useful, when it comes to concepts often used in the organizing of environment and environmental issues. It that sense, the distinction concept / counter concept was given broader attention than solely to look at the specific counter concept of environment.

Observation of the understanding of environment and environmental issues is usually an observation of first order observation and in that way what is taken for granted as being in the world. Taking this for granted, the meaning of the concept can often be a category and/or specific activities connected to the concept or in other words the way it takes shape. In that way the transcriptions, the notes and the information material were analyzed for the categorizing of environment and for the type of activities mentioned as environmentally activity. That could be both environmentally activities actually donned and what was expressed as should be donned.

This gave rise to four specific ways to observe the environmental communication or the observations of the organizational practice in the search of how environment was understood in the enterprise[13]:

1. Environment / Counter concept
2. Concept / Counter concept
3. The categorizing of Environment
4. The way Environment takes shape

Environment / Counter concept
Through this perspective of observing the environmental communication I found economy as the counter concept of environment. This was expressed very strongly in all positions and in all the types of communication taking in to consideration in sentences like the following:

"Somehow I feel a little bad about spending more money on this, because I know, that if I sell them (dosage machine) *then my sale will go down."*

"It is no secret, that there is a better contribution margin on non-environmental products… therefore somebody could be tempted not to sell them."

"Of course, this (dosage machine) *is also most interesting to new costumers. That's obvious. Of course our present costumers can buy it, but it is not very interesting."*

"Yes, but of course it (installing dosage machines) *is interesting to the customers, but it is probably not the case, were we will bring the hardest efforts. Because, if their consumption fall by 75% - that might not be very interesting. It is not purely idealism; it is also a matter of business."*

Correct dosage and sale of environmentally labelled products are accepted as ways to concern about the environment, but for the individual advisory salesperson these routines will be barriers to comply with their individual budgets. As regards the enterprise as a whole the correct dosage and installation of dosage machines means less sales of soap and thereby lesser earnings.

Concept / Counter concept
By this perspective of analyzing I met a very important and often mentioned statement and sort of a concept among the advisory salespersons sounding: *"This* (Environment) *we do not offer very much time"* with an obviously counter concept sounding: *"This we do offer very much time"*. This statement showed the very weak priority of the environment and in the same time that something else had a very high priority and were time consuming.

In the search of how environment was understood in the whole enterprise I was, as mentioned, interviewing all kinds of positions in the enterprise. Despite some specific differences between the different positions, the general picture as it is shown in this paper was an overall harmony in the understanding of the environment end environmental issues. Seeing and accepting that we will never be able to place the responsibility solely at the advisory salespersons, but have to accept that the responsibility is diffusely spread all over the enterprise.

The environment was obviously understood among the advisory salespersons as something they didn't have to offer much attention and expressed at the same time the whole lot of routines which were given a high priority in daily work. As the highly prioritized routines and items it became visible by the observation of the environmental communication that daily selling, selling campaigns, to comply with their individual budgets, economy in general and the like was very time consuming items - not only among the advisory salespersons but among all different positions in the enterprise. This was often expressed of the advisory salespersons in the conversations taking place, when I followed them during a full days work[14] and further it was more indirectly expressed in the different interviews in sentences as follows:

"Our company takes no initiatives to reward sale of environmental products. There are methods to control that stuff, so that if you do a lot to sell environmental products, you will get bonus. In that way, we are not pressured by the company to go out and do it."

"They should focus more on it. It is also true, what XX says, when we launched these swan-marked[15] products, they focused on it in one or two meetings, and then it died. Nobody stands up and says – 'it is not good enough. We need to speed up'."

"You run the risk of driving around a whole day where nobody mentions environment, but that is also instructive, since afterwards you can say 'why the hell don't they talk about it?'"

This dominating concept was expressed very often in the environmental communication in spite of the very common understanding among both employees and the different managers that Ecosoap in general concerns about the environment and despite the fact that also surroundings like the local authority, different consultants and some collaborators experienced Ecosoap as a company taking environmentally concerns seriously.

The categorizing of environment

With this categorizing perspective it becomes quite clear that environment was all the time referred to as their environmentally labelled products expressed through sentences as the following:

"We raise or profile a lot on environment. We are regarded as very environmentally friendly in the market. We have environmental products all over the line."

"It is on the agenda. Not doubt, that when new products are developed, environment is an important element. I don't remember any new product during the last 1 or 2 years, where environment is not an important element, if not the most decisive."

"When we have had a sales meeting, they have had one hour's discussion on environment. Every time we have a new product, environment is included… So, for that reason alone, there is a now sort of brush up, every time a new product comes up. Then we are told what the environmental dimension of the product is. It has been one or two hours – not more."

These conversations are not possible to cite very precisely as I in the wish of a free conversation didn't tape the conversations, but only took down notes.

The Swan-mark is a Nordic label for environmentally friendly products.

It might not be a very surprising categorization in a production and selling enterprise, but could anyway be a very narrow understanding of environment and thus one of more barriers to a further environmental concern in the enterprise.

The way Environment takes shape

In the perspective of how environment takes shape in the enterprise it was very strongly expressed that the environmentally concern understood primarily as the environmentally labelled products should be a demand by the costumers and should not to a very great extent be a theme launched by the advisory salespersons. This was expressed in sentences like this:

"It is apparent that we are afraid of going out like preachers. The market must be kind of ready for this message, and we probably don't feel, that is very much the case. The local authorities focus too little on environment. There is a kind of stagnation where we feel, costumers focus more upon prices."

"Some costumers aren't ready for this. You have to be able to distinguish. It is no use coming out as a salesperson with a lot of show and green waves, if your customer just needs something that works and it has to be now and it should smell like perfume. Then that is not the thing, you should do."

Further the environment took shape as the practice of using less soap and thus using correct dosage of soap and dosage machines. Correct dosage was understood as environmentally practice, but as we saw it above strongly conflicting with the economically concern. Environment understood as the practice of correct dosage was expressed like in the following sentences:

"And it is probably there (by dosing) *you get the largest gain for the environment. This understands Mrs Hansen, who is doing the cleaning job, perfectly well."*

"The largest hurdle is in the dosage machine, because there is no doubt, that it is the way to think more environmentally. In every meaning of the word. And then we face the economic hurdle about investment in the equipment. And the operation and who is to take on the largest burden here. As it is now, it is Ecosoap."

Further the environment took shape as being abreast of legislation and as a demand from the surroundings expressed like the following:

"Environment is given a high priority in Ecosoap, because we develop new products all the time, so that we are abreast of legislation."

"There is a requirement that you do these things. Therefore, the company says, we have to do this, if we want to survive in this country. Don't tell me that all those companies – also abroad – have spent all that money, if there were no requirements."

The form of environmental communication

By observing and analyzing the environmental communication in Ecosoap it became clear that the dominating blind spot in the organizational practice when it comes to environmentally issues was the strong focus on the advisory salespersons individual budgets. In Luhmanian terms this should further be understood as the dominating form of communication. It is dominating in the way that this is the form that the rest of communications are referred to and bounded up on.

As it was explained above the distinction is drawn from the blind spot and should in the quality of being the dominating communicational form be a distinction between two sides which at one and the same time was impossible to connect but in their connection was the motive for further action and communication. In Ecosoap the distinction based on the individual budgets was the distinction between the advisory role of the salespersons and the role as solely being salespersons. These two roles were very difficult to connect in the organisational practice and practice was always taking place at one of the two sides in the daily work. At the same time the connection of the two roles sets the agenda of the communication and the decisions in the enterprise as a whole. The dominating form of communication is shown in figure 1. Looking at the distinction between environment / counter concept and between concept / counter concept as they were used in the observation of environmental communication it became very visible how this distinction of the advisory role and the selling role and thus the individual budgets was the dominating form of communication. If the environment should be more concerned in the enterprise and in the daily work of the advisory salespersons it should obviously be in the role as advisor. The conflict between the advisory role and the selling role does easily make the routine of advisory in conflict with the economical focus in the role of selling. Thereby we could understand the distinction between environment and economy as one of the distinctions elaborated because of the dominating form of communication. Further it became quite obviously why environment was not offered very much time and was not understood as very highly prioritized in the enterprise.

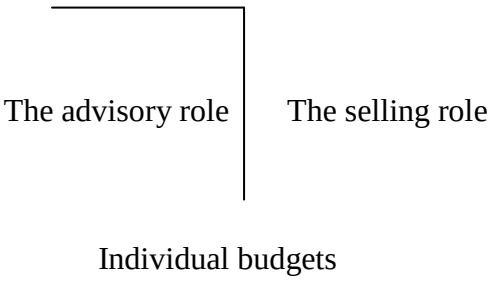


Figure 1.

Problematizing wondering

Summing up the expressed understanding of environment and environmental issues in Ecosoap it is obvious that environmental issues were experienced as being contrary to the economically concern in the enterprise. It was shown how the environment was experienced as having a low priority in daily work despite the fact that the company was experienced by others as an environmentally friendly company. And it was shown that complying the advisory salespersons individual budgets, selling, the economy in general and the likes were highly prioritized and thus force the environmentally concerns out. Further it was shown how the understanding of environment was categorized as the environmentally labelled products and it was shown how the environmentally concern was looked upon as being abreast of legislation and as a demand from the surroundings. Finally it was shown how these understandings were founded in the dominating form of communication as the individual budgets and the distinction between the advisory role and the role of selling.

Observing environmental communication we gain an insight into the understanding of environment in the organizational practice. This insight could never have been achieved by a single investigation of the advisory salespersons practice and thus by the more traditional concept of communication. By posing problematizing and wondering questions to this organizational practice we will be able to question what is taking for granted. These kinds of questions should be a sort of initiator of a reflective practice inside the enterprise. Some examples of these questions as they were posed in Ecosoap were the following:

"When you consider the dosage machine the most important environmental initiative, is it not then a very short-sighted strategy making budgets a brake block?"

"Can environment be other than products and following that: what does Ecosoap want to achieve, focusing on environment?"

"Can an environmentally conscious company leave on demand?"

In this way the enterprise is prompted to reflect about own practice and own understanding. Regardless if they are satisfied with their own practice or they want to redefine practice or interests it will be on the basis of a reflection on their own practice. Thus redefining practice and interests will be founded in its own practice and will not solely be a wish from the environmental manager or the general manager.

How can environmental communication promote a redefinition of interests in enterprises? - Concluding remarks

This very tight observation of communication is a necessity to get an insight in the praxis and understanding of the environment taken for granted. It seems to be a way to go if one wish to redefine interests in the enterprises or other types of organisations in general, because of the opportunity to pose questions to the understanding taken for granted and the kind of "internal" reflection it gives raise. Of course some externalities can disturb this kind of process and in the case Ecosoap they changed the proportion of the owner conditions from being half German and half American to be on American hands only.

Even if the management have read the resulting report and made a few regulations up on it, the new conditions of owner have meant big changes in priorities and by that a lower priority of the environment than so far.

Anyway, I will argue that this very tight insight in the organisational practice and the searching of displacing questions through the questioning of what is taken for granted will be a very fruitful way to go in the search of redefining interests in a contextual and viable way. As a further displacement of the question in focus and as a proposal for further investigation it will be obviously to ask:

How is it a problem to prioritize environmentally concerns higher in Ecosoap?

The problem is that the individual budgets are the dominating form of communication.

How can we solve this problem?

By asking how environment can take place in the individual budgets?

Or by asking

Is it possible to displace the dominating form of communication by something else?

Literature

Åkerstrøm Andersen, Niels 2003: "Borgernes kontraktliggørelse". Hans Reizels Forlag. Copenhagen.

Åkerstrøm Andersen, Niels 1999: "Diskursive analysestrategier. Foucault, Koselleck, Laclau, Luhmann". Nyt fra Samfundsvidenskaberne. Copenhagen.

Bourdieu, Pierre 1997: "Af praktiske grunde. Omkring teorien om menneskelig handlen". Hans Reitzels Forlag. Copenhagen. Translated from "Raisons practique. Sur la théorie de l'action". Éditions du Seuil, Paris 1994.

Bourdieu, Pierre 1977: "Outline of a Theory of Practice". Cambridge University Press.

Callewaert, Staff 1997-1998: "Bourdieu-studier" Institut for Filosofi, Pædagogik og Retorik. Københavns Universitet Amager, Vol. 1-3.

Fiske, John 1990: "Introduction to Communication Studies". 2. edition. Routhledge. London and New York.

Foucault 2001: "Theatrum philosophicum" in "Flugtlinier. Om Deleuzes filosofi". Museum Tusculanums Forlag. Københavns Universitet. Translated from "Theatrum philosophicum" in Michel Foucault, Dits et écrits, II, 1970-1975, Gallimard, Paris 1994, pp. 75-99.

Heidegger, Martin 1994: "Hvad er metafysik?". Det lille Forlag. Copenhagen. Translated from "Was ist Metaphysik?". Vittorio Klostermann. Frankfurt am Main 1955.

Luhmann, Niklas 2000: "Sociale Systemer. Grundrids til en almen teori". Hans Reizels Forlag. Copenhagen. Translated from "Soziale Systeme. Grundriss einer allgemeinen Theorie". Suhrkamp Verlag, Frankfurt am Main 1984.

Luhmann, Niklas 1997: "Iagttagelse og Paradoks". Gyldendal. Copenhagen. Translated from "Probleme mit operativer Schliessung" in "Sociologische Aufkläring 6, Die sociologie der Mensch". Westdeutscher Verlag, Opladen 1995.

Luhmann, Niklas 1995: "The paradoxy of observing System", Cultural Critique, no. 31, p. 37-55.

Luhmann, Niklas 1993: "Risk: A Sociological Theory". Walter de Greuyter, New York.

Løgstrup, K. E. 1996: "Martin Heidegger". Det lille Forlag. Copenhagen.

Thyssen, Ole 1997: "Hjørnesten i Niklas Luhmanns systemteori" in Niklas Luhmann 1997: "Iagttagelse og Paradoks". Gyldendal. Copenhagen. Translated from "Probleme mit operativer Schliessung" in "Sociologische Aufkläring 6, Die sociologie der Mensch". Westdeutscher Verlag, Opladen 1995.

INNOVATIVE TECHNOLOGY IS NOT SUPPORTING ENVIRONMENT: SOCIAL AND ECONOMIC SUSTAINABILITY OF THE DEVELOPING COUNTRIES OF THE EASTERN WORLD

Saeed A.K. LODHI, G.R. MUGHAL and Zakia SHOAB**
Institute of Business & Technology, (BIZTEK), Karachi, PAKISTAN
dr.lodhi@biztek.edu.pk

This paper assesses the development, perspectives and prospects of innovative technology which would be supporting social and economic sustainability in Pakistan. It also draws attention on four factors: introduction of IT, its development, policy issues and innovative methods to implement. Pakistan entered into information age in early eighties. Telecommunication and IT in the country is now growing rapidly. Ministry of telecommunication has recently formulated a strategy for promoting IT industry in Pakistan. The real IT industry requires a world class-enabling infrastructure. In spite of so many prevailing confusions the people of Pakistan have vision and good amount of knowledge. Our education system must create an environment that encourages critical debate with positive dissonance. Information economy in the country needs expansion and improvement that lasts us lifetime. The country is still in the realm of conceptual controversies and is not based on our own experiences to support people's expectations and relevant to realities of our times.

INTRODUCTION

Let us begin by briefly describing the long-term socio-economic development in industrialized countries like North America, Japan and Europe which depend to a large extent on technological advancements. Innovation in electricity, telephone, radio, automobile and antibiotic has revolutionized life in the first half of twentieth century. The rise of Internet in nineties gave the biggest rise in household income, and biggest drop in poverty. Although Internet is terrific, but by itself it can't power growth. Without cost reduction in medical treatment, it won't be possible to supply efficient health care and without new industries created by innovative companies it will not be possible to produce enough goods and jobs to replace the ongoing industries(1). Without a breakthrough in energy production and distribution system, it will not be possible to provide cheap power for industries(2). Another reason to go for strong growth is to expend efforts in research and teaching competence in education at all levels. It has now become clear that schools, colleges and universities are the places where citizens acquire skills necessary to prosper in the fast changing world of today. With more smart people working with new ideas, the rate of innovation move up very fast(3).

The US and EU still dominates the world as the most powerful twin turbine of global economy . Transatlantic commerce accounts for sixty eight per cent of the world's trade and investment, worth $2.5 billion in GDP annually and employing some 12 million workers(4). While Asia may enjoy the hottest business, but major corporations like, General Electric believes that an expanded Europe offer greater potential for short and medium term profits. The European union is now the largest pool of purchasing power in the world, even more important than China and India. Much excitement is lurching on the former communist countries of Europe, where cheap and skilled labour has attracted many world-class companies to invest(5).

Corporate American companies stake's in Europe in running about sixty per cent higher than their investment in China, which is $16.6 billion in Europe in 2003 versus $10.3 billion in China(6).

Telecommunication and information technology in Pakistan during the last 25 years is affecting all social structures. Computers are being introduced in an ever-increasing variety of social activities. The diffusion of IT is happening in a completely anarchic manner unchecked by any viable social control. The basic transformations are being imposed on global trading methods, production structures, capital flow and labour market(7). This has seriously hampered the scope of further industrialization in Pakistan especially in export, production and services sectors. We in Pakistan have not paid enough and serious attention to employment generation, skill development and welfare aspect of the industry. Most of the policies made so far, are of mechanistic in nature. The country's commercial polices lack a clear strategic vision.

The main objective of paper is to determine the impact of IT growth in social and economic sustainability. The study specially examines following points: (i) The trend in growth rate of IT industry. (ii) Comparison of growth at the time of beginning and now. Objectives are set to test the following hypothesis: (i) The technology has accelerated in a haphazard way to develop knowledge and development of socio-economic conditions. (ii) The introduction of IT has not augmented the development to the desired level on sustainable basis.

CURRENT STATUS OF IT IN PAKISTAN

One of the major problems faced by Pakistan's IT industry is not so good, an image of its performance(8). This has inhibited potential foreign investors from engaging with Pakistani industry and therefore, thousands of Master's and Bachelor's degree holders in IT are not fully employed(9). Our IT industry can be classified under the following categories:

(i). The traditional software houses are developing custom-made applications. This is now slowly declining for the reason that they are no longer cost effective, nor viable for a progressive enterprise, although Retsol, Techlogrix and Systems limited are growing in term of employees and performance(10).

(ii). The system integrators, which provide total solutions, are growing with time. Such companies put together the hardware, the data communication infrastructure and the software giving implementation support and training to deliver the business benefits to the customers. Si3, PIFRA, PWC, Sidemen's and Acconture are worth mentioning(11).

(iii). The Internet services providers (ISPs) growth is rapid, nearly all multinationals are now using channel mechanism to carry out their businesses, whether this be personal computer or a database management system or office automation(12).

(iv). The IT enabled outsourcing sector specially the "call centres" which currently employ 2500 individuals in the industry are serving international clients and another 2500 providing services to domestic customers. In this sub-sector the growth is expected to be 60% provided the government provide more marine cable facility in the next 2-5 years(13).

(v). The legal and medical transcription services have been providing a clinical support service since 2003 with current employment of about 1000 individuals. Other outsourcing services like accounting and engineering design provide a high value addition to their clientele. JGC and Descon have $5.0 million annual revenue and to employee more than 300 highs-end mechanical engineers(14).

THE GOVERNMNET'S SUPPORT:

The telecommunication ministry has recently formulated a strategy for promoting IT industry in Pakistan, significant elements of this strategy are: -

(a). Offering incentives to foreign partners. The multinationals in the past were selling their products in Pakistan without creating research facilities in Pakistan. Microsoft and other international stakeholders are now awarding R & D projects to Pakistani universities to localize their software products(15).

(b). Focusing on selected areas for out sourcing in: "Call centres", Accounting, Insurance claim processing, and Mechanical engineering design for auto spare parts and defence industry.

(c). Promotion of "productization" amongst software companies causing a paradigm shift from customized solutions towards the use of pre-packaged software.

(d). Strengthening academic R & D with emphasis on linkages with civil industry and defence production.

(e). Engaging actively with internationally known research and consultancy companies, like Gartner, IDC, Bearing Point and others to enhance credibility of Pakistani IT industry.

(f). Coordination with industry associations like EPB, BOJ, and the PASHA (16).

The local IT industry requires a world class-enabling infrastructure (17). The government is promoting Parks and Incubators across the country. The telecom infrastructure is being modernized to offer broadband access as the backbone for the Internet access to universities, local loops for the development of national Internet content to financial institutions, banks and DFIs, to create friendly environment and investor's confidence to allow technology companies to be listed on the stock exchanges of Pakistan. The key projects to be supported by the government are citizen's online e-commerce network and e-government project training, in area of digital signature Act, copyright Act, Intellectual Property Right and Consumer Protection Act (18).

An area needing immediate attention by government is IT education (19). Training of the trainers will develop good teachers who can teach IT efficiently and effectively, if they themselves are familiar with the latest technological tools and techniques. After September Eleven most of the Pakistani companies have faced difficult times. The opening up of call-centre business has become a source of foreign exchange earning and has opened up lucrative employment opportunities.

The government is preparing to give legal cover to electronic transactions. Extension of ATM facility for paying utility bills through Internet will prove low cost per transaction and time saving. The banks need to create awareness about utility bills payment through ATM to general public as a marketing campaign (20).

Pakistan has not been able to create IT impact globally. It was not incorporated in the list of the world economic forum report 2003-2004 on global competitiveness in IT, whereas Bangladesh made its place in the top 80 countries. The introduction of computer technology in the country occurred in late 1970s, with the establishment of FAST institute at Lahore and Karachi by Bank of Credit and Commerce International (overseas) Limited(21), but for over one decade the government did not realized the significances of computer science education and did not bother to introduce it at college level.

Dr. Atta-ur-Rehman took the first serious step to boost IT in Pakistan as Federal Minister for Science and Technology in March 2000. Dr. Atta-ur-Rehman brought about IT buzz, but that was short-lived. Today, in 2005 because of the apathy towards the technology with unwelcoming job market for BCS and MCS graduates, the institutes, which invested huge amount in the infrastructure for computer science departments, are now offering engineering technologies, MBA and media management courses in increasing numbers. It appears like a demise of IT education in Pakistan. One would not like to discuss Operation Badar and Operation Ohad (22). This hype was rife from 1999 to 2002, and hundred of students got carried away with cheap but false prospect of quick success with lucrative jobs. The project was initiated to give IT education to the masses and to mint money hurriedly but the students' endurance was much beyond sacrifice.

Dr. Atta-ur-Rehman during 2000, very rightly said that if the nation can generate at least 100,000 high quality IT graduates, we may earn foreign exchange of US $ 3 billion per year. Unfortunately we failed to educate 100,000 high quality IT graduates in Pakistan. We, now can see what India has achieved through their IIT's in three decades(23). Let us be convinced that IT is not about software, hardware and networking, it is about everything that education prepares our upcoming generations through the confidence, competence and sheer dedication and commitment of our teachers and supportive action by the government. Let us all as a nation take resolute steps towards knowledge based education by dissipating uncertainty and bring confidence back in our youths which was so courageously created during 1980s(24)

DISCUSSION

INFORMATION SEARCHING COST:

We are living in an age where information is a valuable commodity. It can increase consumer's satisfaction, producer's profits, government efficiency and economy of the country. The economics of information tells us about imperfect foresight. It is impossible to be certain of what the future holds as we are facing an overwhelming tide of information. We can talk to virtually anyone on the globe by telephone. We can follow struggle of liberation movements and political resolutions as they unfold on T.V screens. We can use our personal computers to retrieve and process libraries to search for information which in reality is both valuable and costly to acquire. The need for information is unlimited but the resources needed to produce information have alternative uses.

The acquisition, processing and dissemination of information take time. Perhaps the most obvious scarce source is time. Time spent reading books or listening to knowledgeable scholars cannot be used for other activities. Unfortunately we don't have the time to read, watch or listen, because information search is governed by cost and benefits. Information is collected until the cost of searching information is equal to the benefits generated by the information. The most efficient amount of search lies somewhere between zero information and complete information. The economics of information search tells us that complete and perfect information can be prohibitively costly.

In USA Google search engine is still the forerunner with 36.5% of the queries, Yahoo with 35.5% and MSN stands at 15.5%(25). These big three are investing aggressively in search technology. A number of new starts ups mostly clustered in Silicon Valley and in Seattle offer a new venue of the next frontier of search, where there is no limit to imagination. Still and moving images are being increasingly digitalized and they can be searched with a click. Singingfish can search AOL's video library of 15000 titles, plus million more over the web by looking for their titles (26).

OUR PEOPLE'S VISION:

In spite of all prevailing confusion and frustration, the people of Pakistan today do not lack vision and could be seen as stimulating, vibrant, creative and diverse with rich and illustrious past. New knowledge is shaping our people into a close knit, collaborative communities. In most instances new ideas are being encouraged in spite of past dogmas and rigid conservatism. Our thinkers believe that creative education is the foundation of enlightenment. Now and in the future the economy will be driven by and depend on creative people. Interaction of people who can think and feel comfortable in taking risks and job endurance. People who can visualize things that do not exist and have the technical and organizational skills to give shape to their dreams. People who are forward-looking and self-motivated are able not only to solve problems but also identify the problems, which need to be solved.

THE AIM OF EDUCATION:

Our education must create an environment which is open and supportive, and encourages critical debates with positive dissonance, inspiration, guidance and ability to understand the real knowledge free from all pollutions and misconceptions, which during the last on thousand years has made us dormant and confused and non-enterprising. We must learn the essence of real life-pleasure and improve our living style with friendly and welcoming attitude.

We must have a supportive environment and should recognize that many of our youths need extra support especially in the early stages of their education. We should create a network of "think tanks" to think about specific issues. With so many different ethnic, economic structure, faith, social tradition. The government of the day need to recreate perfect climates for elaborate thinking and to promote good ideas and friendship to flourish. The students from different social background must be provided with an immensely satisfying experience to broaden their personal knowledge in the classroom that also adds to their credentials when seeking employment.

All our educational centres are supposed to provide freedom of thought with an intellectually challenging and stimulating environment to explore ideas and then carry them through dedicated laboratories and well-equipped workshops. Our schools, colleges, and universities should offer a practice-led learning experiences that develops talent and ultimately give professional edge and ability to make good relations, which will impact their life-work in different phases of their working life with highly charged creative attitude. The hard work will help coming generations to realize their full productive potential. We expect that our youth will take responsibility for their own learning and to acquire conceptual and practical skills that are needed to make the most of their time during student life. Although we expect our students to work hard but they need to have fun and recreation to augment good cultural norms. The creative process designed to equip students with confidence and understanding acquiring a strong grasp of the historical, philosophical and social norms of human societies. This will help our students to develop a rich vocabulary to express themselves in their chosen field that will resonate with a wider audience.

Instead of trying to restrict the information economy in Pakistan, we must direct our efforts towards preparing the workforce to compete in it. With growing fear over the expansion of outsourcing which has been more important to seek input from education. The business leaders and government need to determine how to fast track programmes that will help in reducing the number of out-of-job-the-workers. We take advantages of this great opportunity to offer more advanced course in business management and computer science field. We need to attract new corporate businesses by providing full training solutions to produce better trainers who lead to greater business satisfaction through instructor's effectiveness in tailoring the curriculum and to satisfy students' needs, keeping in view the abilities before and after post graduate teaching.

EFFECTIVE EXAMINATION SYSTEM:

Enhanced technology can provides realistic exams by asking questions with new contents, graphics and complexity. All test assessments including learning based objectives according to prospective employers, options for online advanced reporting features giving immediate results. We need to handle efficiently more resource intensive exams.

Ours educational process should have a good homogenous blending of humanities, science and technology. Selection of student should be done on the basis of age and level of mental understanding and not solely on scholastic achievement. No formal written test to be conducted. Students applying for admissions should be required to go through a series of interviews to assess their entry level. Efforts should be made not to deny admission due to lack of financial resources on the part of students. In case of academic deficiency, students should be required to undergo make-up study by putting additional efforts.

Some higher educational institutions of global structure have announced a long term initiative that intend to create public web sites for some 2000 courses and to post materials like lecture notes, problems sets, examinations, simulations, even video lectures, but the visitors to these websites do not earn college credits. However, most of the universities have been flocking into "Distance Learning", offering courses online to off-campus paying students, but these ventures are failing to offer a whole university environment in one swoop.

THE LIFE JOURNEY BASED ON LEARNING ALL THE WAY:

Let all of us join for journey that will take us on a learning experience that will last us a lifetime. Lateral, inspirational and critical thinking are attributes that promote achievement and future success. Our professional teachers should continually be engaged in research or practices, which influences, and enhances our teaching programmes. Prominent scholars of domestic and of international global standings should supplement the expertise of our teachers in the cutting edge technologies with appropriate teaching practices.

Apart from humanities, social and natural science studies, we must aggressively redesign curriculum in product design, textile, visual communication, interior design, fine art, architecture, design engineering, etc to fulfil the country's needs through healthy competition in trade and industry.

The question of whether university knowledge could be turned into online is a big question. The central value of on-campus education is human experience of students with teaching faculty working in class rooms and laboratories and students learning from each other, and the kind of intensive environment created in the campus, which make arrangements for knowledge gap courses without charging tuition fee or credit rating to identity student's aptitude for efficient technological tools.

In order to minimize the risk of cheating, the students be monitored continuously while sitting for an examination by a video camera with a viewing screen in Controller of Examination's room to view all activities of the examinees from outside the examination room. This viewing includes video and audio monitoring. The academic administration need to be well respectful, and Involved in developing collaboration with other institutes to earn credibility at the highest level, Everyone be allowed to benefit from the website, facilitating a "moment" audit analysis of the current status and performance of the institution. Allow a reasonable discount in tuition fee on the basis of need-cum-competence, the best way to stay current on the performance by talking with academic experts on a pre schedule consultation. The principal shortcoming to exploit benefits from emerging technologies are summarized as under:

WEAKENING JUDICIAL SYSTEM:

The uniformity and universality of law is made, interpreted, modified and enforced by human beings; the perfect justice can possibly never be attained. However, only by insisting on maintaining the principle of uniformity, we can achieve the highest level of justice which is humanly possible. The flexibility of laws allows us to accommodate changing preferences of the society. Many deep-rooted changes in beliefs, institutions and system are needed to transform the system of governance to a well-functioning and just system. It is on record that our lawmakers as well as dispenses of justice have failed to arrive at the same conclusion in essentially similar situations. The judiciary seems not to attach much importance to the doctrine of precedence in arriving at the final verdict.

KNOWLEDGE BASED MANAGEMENT

Knowledge is now believed to have become a tactical weapon. People who are able to learn from their own knowledge and experience can design new methods and techniques, without this no industrial and trade policy or development strategy will succeed. The most crucial yet intangible production input is information and knowledge that should be recreated to suit the ground realities. The strategic area lies in computerization of command –control-communication network required for global trading, avoiding commercial espionage, reducing complexity, rigidity and vulnerability to achieve international competitiveness. Again the gap between what could be achieved with new technologies and the capacity of social carrier is becoming a bottleneck for progress and prosperity in the country. Competency in community research has its own limitations. Community specialist generally tend to become parochial and over focused, many draw unwarranted general conclusions from their limited personal knowledge and experience.

NEW DIMENSION OF NEIGHBOURHOOD RELATION

With October 12th, 1999 event(27), Pakistan was fallen into a deeply troubled relationship with our neighbours. Luckily this is now improving at faster rate since the Vajpai's government in India. We should hope to navigate our way through difficult policy choices in the years ahead, unless we have leaders who understand how the world works beyond our boarders, and the politicians who are able to see Pakistan from the viewpoint of non-Pakistanis, we cannot cooperate or spread our influence in South East, Central and Western Asia. Unless we are able to convince others to see things from our own perspective or help them to acquire information through dispassionate analysis which matters most. Usually it is is not what the decision makers in the government say and do, but their competence and political sagacity is the one that is crucial.

UNREALISTIC HIERARCHY OF POLITICAL PARTIES

Most stalwart politicians in Pakistan are not trained to build a workable social model that can be empirically tested. They are also unable to formulate a feedback system in their own political parties, through activists gathering information from prospective voters. The decisions are usually based on hearsay and are heuristic in nature.

ABSENCE OF COMMUNITY BASED STUDIES

Our academicians have not given serious thoughts to researches on community based studies. Social welfare work training is not a integral part of our college curriculum. We have failed to realize that huge personal involvement is needed to undertake serious research in matters concerning community work.

UNSKILLED AND UNEDUCATED LABOUR

The cynical approach of haphazard and windfall growth by some notable planners, past and present, must realize that the country could not prove attractive to foreign investors by low-labour cost only. The real productive capability difference between our indigenous labour and that of the Far-East Asian countries is due to lack of education. The education that leads to skilled labour will make effective use of productive potentials of the country, which includes manpower, capital resources and management tools. Labour in Pakistan since long is seen as a cheap commodity. There seems less incentive to quality education and skills development in the workforce.

PRIORITIES OF FUND ALLOCATION

Pakistan spends for more on military than on education because India is thought to be a military threat despite looming friendship created very recently. The myth of huge spending on defence forces blinds some of our political decision makers to the bare reality that ignorance is the country's real enemy which we cannot fight with large number of soldiers alone.

HIGHLY FRAGMENTED EDUCATION SYSTEM

How disgusting is the fact that Pakistan has now being dropped from the list of the World Economic Forum surveys. If we were listed, it would come somewhere near the bottom of the list, much lower to India. The reason for our low educational status has been mainly due to highly fragmented educational system. It has created some insurmountable problems in the optional utilization of our human resources under the exciting labour market conditions. It is surprising that present budgeted figure allocated to Pakistan's Higher Education Commission serving a country of 150 million people is about half of the budget of a medium sized university in Japan.

THE DILEMMA OF PRIVATE EDUCATION

Private education is a booming industry in the country. It is perhaps seen as a guarantee to ensure future of our children and to save them from neglected public education system. Private education from 2000 is in the process of being camouflaged by vested interest and moneymaking frenzy. If we want to succeed we must decide to develop confidence in ourselves with such a passion that it is no more rhetoric but becomes a living reality. The detail of knowledge which is important will be picked up in each avocation of life, but the habit of the utilization of well-understood principles is the final possession of wisdom, and it grows as the knowledge shrinks in the process.

ORTHODOX MIND- SET OF BUREAUCRACY

Politician's powerful hold on public opinion has been a source of envy on the part of bureaucracy during the entire period of Pakistan's history. The incident of October 12, 1999 in the country was a wake up call for politicians. The events showed how poorly prepared are our elected civilian governments to deal effectively with crisis situation. On this fateful day no political party had the vision to forecast future events. There was confusion in the press about how and what really happened in that week. The media miserably failed to cover the incident's report correctly and failed to give a rational account of plane hijacking and other events that followed immediately.

UNSCIENTIFIC METHODS OF DECISION MAKING

The ever declining ability of decision members both in public and private sectors is principally due to non-availability of authentic data, absence of good research on sensitive social issues, and the dominant influence of fraudulent moneymakers in Pakistan. This has been the major factor of corrupt practices in the country.

EFFECTIVENESS OF IT

Computer technology is now accessible at the click of a mouse or pressing of a return key. It is no longer possible for any nation, big or small, to avoid this technology. It is easier and more empowering; it is no more impersonal as one may have thought. It opens the doors to warm and lasting relationship. It gives us more or our time for things unrelated to our profession and provides more time resource. Information has assumed unparallel dimension, a sense of freedom, a remarkable flexibility in method and techniques. Many innovative and creative spirits cherish the freedom of not having to be chained to one place. They have the facility of being connected from wherever is convenient for them to be connected. Work now a day does not care where it is accomplished, and if it is accomplished with excellence. Those who confine to a virtual office, they have opted for a life, not of independence, but of interdependence, knowing that they get with a little help from their friends who are really interdependence performers forming a chain of networks.

IT is almost globally operative affecting all social structures. Surprisingly although by nature it is intangible, but is as important to the operation of modern industrial society as oil or coal. Although it is non-material, colourless, odourless and test less yet it is a substance which could be manipulated, processed, packaged and sold by over 60% of the developed world marketable products. Information on a screen, sound, picture, codes, grooves in a recording devices or a digital bits on a computers. Information technology is concerned with processing, transferring and analysing it in communication processes. The numbers of people involved in this activity are huge and are ever increasing. Computer are used by a wide rang of professionals for all kinds of jobs.

It is now touching the lives of most of the people and is bringing radical change in the life style, the pattern of economic growth and perhaps decisive changes in education and training methods. It is creating changes in human societies much intensive than those produced by the industrial revolution. The growing integration in computer and telecommunication technology at a pace in excess of the average growth rate of the industrialized countries economies, data gathering, storage and analysis capabilities of computers are now readily accessible throughout the world.

Computer technology has developed so rapidly that policies designed by national government to deal with important issues are lagging behind. It is very difficult, and in some cases practically impossible to contain and control it within national boundaries. Trans-boarder date flow and the privacy and sensitivity of software are two of the principal issues posing risk and dilemma especially amongst the industrialized countries.

Although developing countries are equally effected with these issues, but they are faced with a issue of more serious nature. They are threatened with the danger that their territorial integrity, national freedom, and moral value exposed to impending drastic changes. These countries are also in a comparatively disadvantaged position in pursuing their own development goals and in securing the anticipated growing share in world economic growth in order to meet the needs and aspirations of their people.

It is becoming difficult for countries like Pakistan to obtain appropriate share of the research capabilities to produce new technologies such as, manufacturing technology, control of data networks, intellectual, and professional skills necessary for development. The multinational corporations of the industrialized countries possess high degree of pre-eminence in modern fields of technology creating an attitude of total dependence on the advanced countries.

Pakistan, therefore, cannot escape to face up to these challenges of technology gap, while starting from a position of comparative disadvantage, there is much we can do to overcome our underdevelopment by creating certain competitive advantages on our side. It is necessary that government policies in IT areas will have to be carefully balanced to obtain the principal benefits from the employment of the best technologies in various sector of our economy. One area in which IT is likely to have a profound impact is the development of our human resource. This requires a quantum change in our educational and training systems. We must move in the direction where people play a major role using the kind of skills that need effective education and better training with a proportionally diminishing role for unskilled or semi-skilled workforce. We would require only relatively short periods of specialized vocational type training, to be supplemented by on-the-job training.

The most urgent and primary need for Pakistan is to ensure full access to knowledge of the rapid changes taking place in computer and communication technologies and their applications to develop the capacity to use these. We must also develop the policies, programmes and action plans which would enable us to derive the benefits and minimize the risks associated with emerging technologies.

UNEMPLOYED GRADUATES:

There is a gross imbalance between education and employment market. Knowledge is now believed to have become strategic resource. Restructuring of educational system in view of human resources deployment is of high priority, without this people are not able to earn respectful wages, and without these no economic sustainability will be achieved. Those days are gone when civil service officers were responsible stakeholders. The bureaucracy has brought most of the misfortunes on the nation. We need innovators not replicators and it is not possible to innovate unless one possess proper knowledge and competence in current knowledge in the present world of sophisticated human resource management.

The emergence of IT would have not been possible without recent development in microelectronics and in complementary interface technologies such as, sensors and transmission device. In fact microprocessors, memories, and input-output devices have become increasingly powerful which used to be strictly separated, are now being increasingly linked together into integrated information system.

The first most crucial yet intangible production input i.e., information and knowledge could be recreated, linked together, transformed and communicated practically at random. The strategic area of attack for IT is the computerization, of command- control-communication network required for global industrial development to stop and to reduce complexity, rigidity and vulnerability to achieve international competitiveness.

Although in pure technical terms vast possibilities have been opened up for searching, storing, processing and communicating information. A drastic transformation of labour market in needed which should have positive effects on capital formation, innovation in production methods and towards further industrialization. A significant change in the content and social carrier of work in reorganization of human resources development is needed such as: -

- Flexible working time and creation of part time employment.
- Expansion of informal labour market, especially in the services sector and black economies.
- New methods for employing productive potential of women by integrating the "Home Work" economy.
- New resourcing of labour catch from madarasahs, mosques, mazars, etc.
- Sourcing for all types pf labour from skilled to the scientific, technical and managerial levels.
- Creating new forms of automating scientific, technological and managerial tasks.

The last 58 years of Pakistan has witnessed stagnation or frantic search for survival strategies, which has set the stage for development planning. Now, it is time to plan "On choose and lose basis". The overriding concern of human resources development in 21st century should be to improve the capacity, both of the individual and of society adjusted adequately to a changing scenario of the world. This necessitates:-

(a) Elimination of outright or functional illiteracy particularly in women.
(b) Augmenting basic skills in "Seeing", "Listening", "Reading", "Writing" and Numeric.
(c) Improving general learning ability of individual on collective basis, particularly of females in as many rungs of society as possible.

"Quick Fix" solutions are out dated. We must transform the existing educational and training methods, which are bound to be time consuming. We must not adopt reductionist concept of skill formation. We must clearly understand that human cognition functions in computer based technology which marginalizes the worker, and reduces his decision making and control functions. As the physical efforts decreases the boundaries of knowledge and skills required for the worker, it also intensifies worker dissatisfaction.

Human beings are not computers, while we can imagine being able to reason in a perfectly logical manner. We also know from our own experiences that often we fall short of this quality. Our social thoughts are subject to a wide range of tendencies that can lead us into serious errors. These tendencies sometimes cause us to develop wrong impressions or judgments about others, such errors are related to many aspects of social behaviour, including first impression of others, persuasion and judgment about others innocence or guilt. On the other hand, we human being are capable of remarkable achievements. We can perceive future events we respond instantly to external stimuli, we are capable to solve complex problems. We can create "master piece" things and ideas.

When people interact with a computer system. They are primarily interacting with information or data in a raw form. Our objective in using the machine is to carry out a task in which information is accessed, manipulated or recreated. The understanding how people use computer as a system of information processing comes from studying how user interact with computer in a particular work environment. This study is technically called Human Computer Learning (HCL) and consists of four components: (a) the users, (b) who has to do a particular task or job, (c) in a particular context, while, (d) using a computer system.

Each of the above components has its own characteristics, which influence the nature of the interaction between the user and the computer system. The user interface of a computer system is the medium through which a user communicates with the computer. It can be thought of as those aspects of the computer which the user comes into contact both physically and cognitively. To this end HCL is essentially cognitive, as it involves the processing of information within the capabilities of the users' mental ability, in cases where computer is used within an organization, it is necessary to understand social psychology.

Social psychology deals with ways people interact with environment. In social psychology the human information processing involves the following stages:-

- Encoding the information from the environment into some from of internal model already present in the brain.
- Comparing this representation with previously stored model in the brain.
- Deciding on a appropriate response, then
- Organizing the response and consequential action.

The implementation of computer technology does not occur in a vacuum. Computers are used in quite different organizational contexts, and human cognitive faculty is required on a fairly large scale. It has been proved that even routine computer operations depend upon human judgment.

The expansion of skills required for the manipulation of physical world is bound to be an essential element of any strategy of human resource development. In future scientific and engineering efforts human capability will become more widespread and receive more cultural prominence. The need for some level of technical qualification as part of normal employment requirement will be increased. The computer based automation is applied to a growing number of industrial manufacturing and complementary service activities. As a result of computer based automation, workers mastery of a specific set of tasks within precisely defined job roles in becoming less important than his ability to integrate individual activities within the flow of the production process as a whole.

Education and training institutions may help to produce cognitive and vocational skills, as well as behavioural pattern. Educational achievements are powerful determinants of occupational and social competence. But the instrumental component of educational system might lose its capacity to contribute to economic and social development. Nowhere has this instrumentation of education is carried further than in the United States. However, its results have hardly been convincing. According to some studies carried out by National Science foundation of USA(28), there has been a significant decline in the capacity for both, research and teaching.

According to Harvard graduates school of education, the dominant American approach to education has emphasized logical mathematical knowledge learning process. Is this the best approach for the rest of the world? Is it even the best approach for the United States of America?

CONCLUSION

Although the world has changed for better, but the pace of change is very drastic. The capability of human being has expanded enormously, his dominance and reach to control events has enlarged. Modern world would survive provided it is able to take right decisions about the problems faced by people squarely, just and in time.

Confusion in social, moral and emotional conditions is getting very disturbing. Material progress achieved through the use of technology is all pervasive as compared to moral and psychological competence of human societies. Western societies are now practicing their ideologies, but contrary to this Eastern societies are still in the realm of conceptual controversies. They do not practice their ideologies honestly and are unable to measure their progress in real practical terms.

Philosophy and social psychology has clarified our understanding, concepts, thoughts and ideas, which are usually interactive and lead to real results. Social psychology has now reached to the stage where it is possible to predict future of human progress more precisely. However the western thought process is very distinctive in its paradigm, but in the East it is quite otherwise. Our thought processes in the East are not so consistent and are not based on our own experiences. It is high time that Eastern societies bring their hopes and emotions at par with realities of our times.

The over all conclusion is that Pakistan has made a moderate growth in social and economic sustainability during the last 59 years. The trend of IT is going up steadily but the time wise transformation of knowledge from the beginning till today is sluggish. It is less than 1.0% of our GDP.

REFERENCES:

1. Time ripe to move for innovation, Amanullah Chaudhry Pakisan and Gulf Economist, March 6-12, 2006, Vol XXV, No. 10 page 48.
2. Oil falling heavy on exchequer, Haris Aamir, Pakistan and Gulf Economicst, March 20-26, 2006, Vol XXV, NO.12, Page 41.
3. Excellence in Performance through human capital Saeed A.K. Lodhi, Pakistan and Gulf Economist, May 8-14, 2006, Vol XXV, page 46.
4. The Economist, April 22, 2006.
5. The Economist, April 12, 2006-07-26
6. The Economist April 6 2006.
7. Pakistan and Gulf Economist, March 13, 2006.
8. Pakistan and Gulf Economist
9. Pakistan Management Review, Vol XLI, No. 2, 2004
10. Pakistan Gulf Economist, March 20, 2006-07-26
11. Pakistan Management Review Vol XLI, no.2, 2004

12. Ministry of IT, Govt. of Pakistan, report 2001
13. Pakistan & Gulf Economist, May 8, 2006-07-26
14. Management Today, Pakistan PRMG Group Report 2006
15. Pakistan & Gulf Economist, April 14, 2006.
16. Pakistan & Gulf Economist, April 22, 2006
17. FAST Annual Report, 1998.
18. Pakistan & Gulf Economist, June 2006-07-26
19. Pak-Millennium Conference 2002, Dr. S.T. K. Naim, Pakisan Council of Science and Technology.
20. Pak Millennium Conference 2002, Dr. Sohail Naqvi, Enabling Technologies , Pakistan.
21. FAST Annual Report 1985.
22. Operation Badar and Ohad, Sir Syed University of Engg. And Technology, Report on IT incubator, 1990.
23. India Today, 2001.
24. FAST Annual Report 1987.
25. The Fortune, April, 2005
26. The Fortune, May 2005
27. The Herald Magazine, Karachi Oct. 1999.
28. Harvard Report, 2000

NEW RULES OF BUSINESS CONDUCT: AN INVESTIGATION ABOUT SUSTAINABILITY ISSUES IN THE CHEMICAL SECTOR

Saime ÖNCE, Nuray TOKGÖZ,
Anadolu University, TURKEY
sonce@anadolu.edu.tr

The businesses use the Web as a medium for publicizing their sustainability efforts. Twenty web sites of Chemical sector companies listed on the Istanbul Stock Exchange (ISE) are analyzed in terms of sustainability reporting. Chemical sector companies' web sites were examined by content analysis method. The data were analyzed by SPSS 13.0.
In this study, 96 variables are used over eight dimensions to evaluate web sites' content to provide information about sustainability issues. The eight dimensions are: location on the web, menu title, section in annual reports, reporting attributes of company, stand-alone reporting, third party certification and awards, management approach, and "other".
Environmental, social and economic issues are basic integrated issues for sustainability. In this study, we realized that even if most of the companies made room for sustainability issues on their websites, only three of them published stand-alone report for sustainability.

I. INTRODUCTION

Sustainable development balances three principal requirements: (a) The needs of society (the social objective); (b) The efficient management of scarce resources (the economic objective); (c) The need to reduce the load on the eco-system in order to maintain the natural basis for life (the environmental objective)(1).
Global business environment and society re-examine business' responsibilities. Stakeholder approach, sustainable development and greening company initiatives disclose corporate sustainability. Corporate or business sustainability is about giving equal weight to importance the social, environmental and economic impacts of business operations, and considering the overall impact of these factors on an organization's ability to succeed in the long term (2). Sustainability is a concept that has started to become embedded in Europe and in certain Asian countries (3).

Sustainability is an evolving concept in Turkey, especially for chemical industries. Turkish Chemical Manufacturer Association (TCMA), officially established in 1986, has been in continuously striving to provide professional assistance to the Turkish chemical industry along with relevant representation of TCMA in the international arena and heightening the level of scientific and research activities for the domestic chemical industry (4).
TCMA's primary mission is to help generate resolutions on general policy and current specific issues through interactions with appropriate government authorities, NGOs and the press media in order to contribute to development of the chemical industry and its sub sectors.
TCMA intensified its efforts on the environmental issues shortly after becoming a CEFIC (Conseil Européen de l'Industrie Chimique / European Chemical Industry Council.) member in 1992. At that time, the most conspicuous aspect of the CEFIC membership was the Responsible Care initiative of the world chemical industry, which had already received due attention in most of the developed countries. Responsible Care initiative was more than "just a program".

Companies worldwide have come under increasing pressure to conduct their business in a transparent and responsible manner. For greater transparency and better disclosure of accountability, there is a growing demand for public information about how companies conduct their business in the context of sustainable development. Business leaders recognize its importance and they know it has a big impact on their brand and reputation. Recently publications, experts and academicians are discussing this idea and how it is being embraced worldwide. On the other hand, what its indicators are, how it is being reported, how it is being reviewed and how it is being verified have been discussed.

Company web sites have become increasingly ambitious and elaborate in their functionality in manner information transfer environment (5). Websites can not only contain a much broader range of information but also provide for information needs of a broader range of stakeholders. Because of this, websites are an important vehicle to inform sustainability issues information and reports to stakeholders as well as company information, products, investor relations etc. Sustainability reporting practices are fast becoming best practice as companies seek to report and communicate their social and environmental performance as a means of protecting and enhancing their reputation and brands. Other key drivers behind sustainability reporting are attracting talent, supply chain pressures, support and encouragement by regulators, increasing influence of non-governmental organizations, advances in communications technology and financial markets' interest (6).

The benefits of sustainable reporting include (a) improved risk management through stakeholder consultation, involvement of employees, sound governance systems and monitoring of performance, (b) more informed decision making as a result of identifying concerns of key stakeholders and developing sound information collecting and reporting processes, (c) the best employees practice ethical and sustainability values, (d) a competitive advantage with customers, suppliers and providers of finance(7).

Sustainability reporting is still largely a voluntary practice in many countries in the world as well as in Turkey. However, this is changing. In countries such as France, Germany and the Nordic countries mandatory requirements have been introduced.

II. METHODOLOGY

In this paper, chemical sector companies' web sites are examined by content analysis method. Authors processed the data by SPSS 13.0.
In this paper, authors decided to analyze the web sites of Chemical sector companies to be included in the ISE (Istanbul Stock Exchange) in Turkey to find information about sustainability issues. In this study, 20 companies' web sites are analyzed because 23 companies are only listed in the ISE and 3 of them do not have web sites. Web sites' addresses are listed on the end notes.
Web sites were examined during September 2006. Corporate Governance Principles Compliance Reports in web sites are excluded, because authors examined voluntary information about sustainability and sustainability reporting but these Corporate Governance Principles Compliance Reports are mandatory.

To evaluate the web sites' content to provide information about sustainability, eight dimensions are used which are: location on the web, menu title, section in annual reports, reporting attributes of company, stand-alone reporting, third party certification and awards, management approach, and "other". The final analysis used 96 variables over eight dimensions. The variables can be seen from the tables. After all the web sites of 20 companies are reviewed, sustainability related menu titles, text and files are determined. Authors agreed on eight dimensions and 96 variables coding table. Web sites were independently coded, differences discussed, and the coding instruments revised and extended until there was believed to be sufficient convergence of views.

III. FINDINGS

Company web sites have been strategic communication tool that their importances are increasing for all the stakeholders. Because of this, we looked at the Companies' web sites in order to see their sustainability related issues.
The data is collected by using content analysis and then analyzed by SPSS 13.0. By using the frequencies and cross tabs tools, we summarized some of the notable findings. We found the following statistics:

- 65% of all companies have placed "sustainability related information" as a separate item in their main navigation.
    - We found "environment" is the most used topic in the main navigation. 54% of companies disclose about environmental issues.
    - Besides the environment "Corporate Social Responsibility (CSR)/Community (31% of companies)" and "Health, Safety and Environment (HSE) (23% of companies)" are placed on the first page.
- 85% of all companies have placed "sustainability related information" as a separate sub-menu item in their web sites.
    - Principles and Policies, HSE and CSR/Community titles are the most emphasized subjects by 30%.
    - Environment is the second most emphasized sub-menu item by 24%.
- 70% of all companies have "2005 annual reports" in their web sites. 64% of them have sections about sustainability issues in their annual reports.
    - Human Resources/Training and Education is in first place, with 67%.
    - Occupational Health and Safety is secondly placed with 33% and Environment (22%) and Social Responsibility (22%) follow.

Table 1: The Distribution of Sustainability Issues in Companies Websites

	Company name	First level of home page	Second level of home page	Number of paragraph (If informal information)	Availability of annual report 2005 in web	Section in annual report 2005	Number of paragraphs in annual report
1	**Advansa Sasa**	*Health, Safety and Environment (HSE)	*Sustainability related *HSE related *Commitments (Principles&Policies)	51-60	Not Available	---	---
2	**Aksa**	*Environment component *CSR/Community *Business Excellence	*Environment component *Sustainability *HSE *CSR/Community	41-50	Available	*Donation and Social Welfare	6-10
3	**Alkim Kimya**	*Environment component	*CSR/Community	1-5	Available	*Environment	1-5
4	**Aygaz**	*CSR/Community	*Environment component *Sustainability *CSR /Community	51-60	Available	---	---
5	**Brisa**	*Business Excellence	*Environment and Occupational Health and Safety	5-10	Available	---	---
6	**ÇBS Boya**	---	*Social component	11-20	Not Available	---	---
7	**Deva Holding**	---	---	---	Not Available	---	---
8	**Dyo Boya**	*Environment component *CSR/Community	*CSR/Community	21-30	Available	*Social and Cultural Activities *Human Resources' Training and Education	21-30
9	**Eczacıbaşı İlaç**	*Environment component	*Commitments (Principles&Policies)	11-20	Available	*Human Resources' Training and Education	1-5
10	**Ege Gübre**	---	---	---	Not Available	---	---
11	**Ege Plast**	---	---	---	Not Available	---	---
12	**Good Year**	*Environment component	*Social component *Environment	21-30	Available	---	---
13	**Hektaş**	*Environment component	*Environment	11-20	Available	---	---
14	**Marshall**	---	*CSR/Community	101+	Available	*Human Resources' Training and Education *Social Responsibility	31-40
15	**Petkim Holding**	*Environment component	*Environment and Occupational Health and Safety	11-20	Available	*Occupational Health and Safety *Environment *Human Resources' Training and Education	21-30

Table 1: Cont.

16	**Petrol Ofisi**	---	*HSE	41-50	Available	*Human Resources' Training and Education *Social Responsibility	11-20
17	**PİMAŞ**	---	*Social	1-5	Not Available	---	---
18	**Soda Sanayi**	*Health, Safety and Environment (HSE)	*Commitments (Principles &Policies)	101+	Available	*Occupational Health and Safety *Environment	1-5
19	**Turcas Petrol (Shell&Turcas)**	*CSR/Community	*HSE *Commitments (Principles &Policies)	21-30	Available	*Occupational Health and Safety *Environment *Human Resources' Training and Education	1-5
20	**Tüpraş**	*Health, Safety and Environment (HSE)	*HSE	21-30	Available	*Human, Community and Environment	21-30

- 85% of all companies have various third party certifications about sustainability.
  - 94% of them have ISO 9001.
  - 59% of them have ISO 14001.
  - 41% of them OHSAS 18001.
  - Only one company has SA 8000 certificate.
- 40% of all companies have national and/or international awards about sustainability.

Table 2: Certificate and Awards Profile of Chemical Companies Listed in ISE

	Company name	Chemical, Plastic and Petroleum Sector	IMKB Index 2005	Third party Certification related to sustainability issues	Awards related to sustainability issues	Mentioned management approach and systems within the organization
1	**Advansa Sasa**	Other	XU 100	ISO 9001	---	---
2	**Aksa**	Chemical	XU 050	*ISO 14001 *ÖKO TEX100 *OHSAS 18801 *ISO 9001	*Environment *Responsible care *TKSD-R&D *TKSD-Community Panel *Energy Savings	---
3	**Alkim Kimya**	Chemical	Other	*ISO 9001	---	---
4	**Aygaz**	Petroleum and coal	XU 100	*ISO 14001 *OHSAS 18001 *ISO 9001 *ISM *CE&PI	*Environment *Most Successful Company *National Quality Award,	EFQM Excellence Model
5	**Brisa**	Rubber products	XU 100	*ISO 14001 *ISO 9001 *QS 9000	*Environment *National Quality Award *Social Responsibility *European Quality Award	EFQM Excellence Model
6	**ÇBS Boya**	Other chemical products	Other	*ISO 9001	---	---
7	**Deva Holding**	Other chemical products	XU 100	---	---	---
8	**Dyo Boya**	Other chemical products	Other	*ISO 9001	---	---
9	**Eczacıbaşı İlaç**	Other chemical products	XU 050	*ISO 14001 *ISO 9001	Environment	Integrated Quality Management System
10	**Ege Gübre**	Chemical	Other	---	---	---
11	**Ege Plast**	Plastic	Other	*ISO 9001	---	---
12	**Good Year**	Rubber products	XU 100	*ISO 14001 *EMAS *OHSAS 18001 *ISO 9001 *QS 9000	Environment	---
13	**Hektaş**	Other chemical products	Other	*ISO 14001 *ISO 9001	Responsible Care	---
14	**Marshall**	Other chemical products	Other	*ISO 14001 *RC Certificate *OHSAS 18001 *ISO 9001 *SA8000	---	---
15	**Petkim Holding**	Petroleum and coal	U 030	*ISO 9001	Environment, Social Responsibility	Responsible Care Programme

Table 2: Cont.

16	**Petrol Ofisi**	Petroleum and coal	XU 030	*ISO 14001 *OHSAS 18001	---	---
17	**PİMAŞ**	Plastic	Other	*ISO 19001	---	---
18	**Soda Sanayi**	Chemical	Other	*ISO 14001 *OHSAS 18001 *ISO 9001 *HACCP *GMP	Responsible Care	Responsible Care Programme
19	**Turcas Petrol (Shell&Turcas)**	Petroleum and coal	XU 100	---	---	---
20	**Tüpraş**	Petroleum refinery	XU 030	*ISO 14001 *OHSAS 18001 *ISO 9001	---	EFQM Excellence Model

- 15% of all companies (3 companies) have stand-alone report about sustainability.
  - Two of them use the "Sustainable Development" title and one company uses "Responsible Care" title.
  - Only one of them uses "GRI Performance Indicators" and one of them uses "Responsible Care Performance Indicators".
  - Three of them are reported in PDF format but only one of them has "English" version.

Table 3: Content of Stand-alone Sustainable Reports

Company name	**Chemical, Plastic and Petroleum Sector**	**IMKB Index 2005**	**Stand-alone Report Title**	**Key elements of report**	**Key performance indicators for measuring and reporting**	**External verification or assurance**	**Availability of Report in Different Languages**	**Report's number of pages**
Aksa	Chemical	XU 050	Sustainable Development	*CEO Statement, Vision and Strategies *Organization profile *Management Systems *Performance (Economic, Environmental and Social) Highlights *Targets	GRI (Global Reporting Initiatives)	Available (Only on Management Systems)	--	119
Aygaz	Petroleum and coal	XU 100	Sustainable Development	*CEO Statement *Organization profile *Energy and LPG Markets *Human Resources *Stakeholder Relations *Environment *Economic Sustainability *Community	Non defined	Non-available	--	32

Table 3: Cont.

Soda Sanayi	Chemical	Other	Responsible Care (2001-2003)	*CEO Statement *Organization profile *Health, Safety and Environment Policies * Management Systems *Occupational Health and Safety *Environment Protection *Making Community conscious of Responsible Care *Product Responsibility *Process Safety	RC (Responsible Care)	Non-available	English	30

Table 4: Reporting Attributes of Companies that Publishes Stand-alone Report

Company name	**What period of time does the report cover?**	**Latest Date of the report**	**Availability of previous years reports in website**	**Date of the first report**	**Regularity of Report**	**Third party Certification related to sustainability issues**	**Awards related to sustainability issues**
Aksa	One year	2005	Yes	2004	Since 2004 regularly	*ISO 14001 *ÖKO Tex100 *OHSAS 18801 *ISO 9001	*Environment *Responsible care *TKSD-R&D *TKSD-Community Panel *Energy Savings
Aygaz	One year	2005	Yes	2002	Since 2002 regularly	*ISO 14001 *OHSAS 18001 *ISO 9001 *ISM *CE&PI	*Environment *Most Successful Company *National Quality Award
Soda Sanayi	Three years	2003	Yes	2003	First report	*ISO 14001 *OHSAS 18001 *ISO 9001 *HACCP *GMP	Responsible Care

- One of the companies that has stand-alone report about sustainability publishes regularly annual sustainable reports since 2002.
- Another one of the companies that has stand-alone report about sustainability publishes annual sustainability reports since 2004.
- One of them published one report that covers three year period.
- Reports are not subject to external verification, but one of them has assurance about management systems in their stand-alone report.

We recognize the common characteristics of companies that have stand-alone reports are:

- All of them have third party certificate and awards about sustainability
- All of them make room for sustainability issues both in main navigation level and in second level (sub-menu)
- Two of them have section about sustainability issues in their annual reports.

We found that all of the companies that have stand-alone report have third party certificates and awards related to sustainability issues. All of the companies that have stand-alone report make room for sustainability issues both in the main navigation and sub-topics. Only one of them did not give a space to sustainability information in its annual report.

We investigated that sustainability related information are supported by visual materials like tables, graphs and photos in any level of web sites. But none of the web site includes FAQ, glossary and on line ordering facilities about sustainability. Even if sustainability issues are accepted as a part of non financial reporting, quantitative information is rapidly increasing and becoming standard.

IV. CONCLUSION

Sustainability idea is evolving and it is steadily becoming more complex and challenging. Producing a sustainable development report is a challenging process that requires top management commitment, clear lines of responsibility and sufficient resources.
Sustainable development reporting –the evaluation of corporate performance in environmental, social and economic terms- can help companies do this in ways that make business sense.

Chemical companies have already initiated sustainability processes, frequently adopting their own individual understandings. Therefore there are not standardized reports for them. Moreover a “one size fits all” approach does not work for sustainable development reporting. Each company will determine its own approach depending on its own situation and needs. But it does not mean that a common framework is not necessary. Report name can be “environmental report”, “social report”, “environment, health and safety report” or an integrated report (sustainable development report, sustainability report or triple bottom line report). All these various reporting forms contribute toward sustainable development reporting (8).

The Responsible Care Codes of Management Practices help companies improve their performance in health, safety and the environment. These flexible and goal oriented codes challenge companies to go beyond what regulations require; cover every aspect of chemical operations and are widely applicable to the supply and distribution chain. Being a member of CEFIC since 1992, TCMA has been conveying all the current developments at international level to its members, along with successful implementation of the "Responsible Care" initiative in Turkey since 1993. Although RC performance indicators are not comprehensive compared to GRI performance indicators, chemical sector companies have become pioneers in sustainable reporting.

Findings of this research are that 65% of all companies have placed "sustainability related information" as a separate item in their main navigation. Environment is most common title. Besides the environment, Corporate Social Responsibility/Community and HSE are placed on the first page.

85% of all companies have placed sustainability related information as a separate sub-menu item in their web sites. Principles and Policies, HSE and CSR/Community titles are the most emphasized subjects.

70% of all companies have 2005 annual reports in their web sites. 64% of them have sections about sustainability issues in their annual reports. Human Resources/Training and Education is in first order.

Even if only three companies have stand-alone report about sustainability, Chemical sector companies are pioneers of sustainability reporting in Turkey.

ENDNOTES

(1) www.**cefic**.be
(2) Corporate Sustainability, Risk Management, Nov 2002; 49, (11), 50.
(3) Sustainability Reporting Guidelines for Malaysian Companies, ACCA, April 2005, www.accaglobal.com/sustainability
(4) www.tksd.org.tr
(5) Campbell, David; Cornelia Beck, A. Answering allegations: the use of the corporate website for restorative ethical and social disclosure, Business Ethics: A European Review, April/July 2004, 13, (2/3).
(6) Sustainability Reporting Guidelines for Malaysian Companies, ACCA, April 2005. www.accaglobal.com/sustainability
(7) Adams, Carol. " Triple Bottom Line Reporting", www.accaglobal.com/pdfs/environment
(8) Heemskerk, B; Pistorio, P.; Scicluna, M. Sustainable Development Reporting: Striking the Balance, WBCSD. 2002.
(9) www.advansa.com
(10) www.aksa.com
(11) www.alkim.com
(12) www.aygaz.com
(13) www.brisa.com
(14) www.cbs.com

(15) www.soda.com
(16) www.ezacibasi.com
(17) www.deva.com
(18) www.hektas.com
(19) www.petkim.com
(20) www.marshall.com
(21) www.pimas.com
(22) www.turcas.com
(23) www.tupras.com
(24) www.dyo.com
(25) www.petrolofisi.com
(26) www.goodyear.com
(27) www.gübretas.com
(28) www.egeplast.com
(29) www.egegubre.com
(30) www.imkb.gov.tr

REFERENCES

KPMG International Survey of Corporate Responsibility Reporting 2005. Research Report, Universiteit van Amsterdam and KPMG Global Sustainability Services. June 2005.

Sustainability Reporting Guidelines for Malaysian Companies, ACCA, April 2005. www.accaglobal.com/sustainability

The State of Corporate Environmental & Social Reporting in Singapore 2005, Research Report, ACCA.

Top Corporate Sustainability Reports Show Progress. Business and The Environment, December 2004, 5-7.

A portal of Sustainable Development Reporting: www.wbcsd.org

Ajami, Riad A.; Bear, M. M.; Norreklit, H. Multinational Corporate Sustainability: A Content Analysis Approach in Organizational Data Mining: Leveraging Enterprise Data Resources for Optimal Performance (Ed.: H. R. Nemati and C. D. Barko), Idea Group Inc. 2004.

Campbell, David; Cornelia Beck, A. Answering allegations: the use of the corporate website for restorative ethical and social disclosure, Business Ethics: A European Review, April/July 2004, 13 (2/3).

Crawford, David. Sustainability, CMA Management, February 2005, 21-26.

Environmental, Social and Sustainability Reporting on the World Wide Web: A Guide to Best Practice ACCA London, 2001.

Falk, Jay. Sustainability Reporting and Business Value, European CEO, The Governance Issue, May – June 2005.

Funk, Karina. Sustainability and Performance, MIT Sloan Management Review, Winter 2003, 65-70

Gao, Simon S.; Heravi, S.; Xiao. J. Z. Determinants of corporate social and environmental reporting in Hong Kong: a research note, Accounting Forum 29, 2005, 233-242.

Gocenoglu, Hikmet Ceyhun. The effects of Multinational companies on Corporate Social Responsibility Practices in Turkey, September 2004.

GRI, Sustainability Reporting Guidelines, Version 3.0, 2006.

Hedberg, Carl-Johan; Malmborg. F. V. The Global Reporting Initiative and Corporate Sustainability Reporting in Swedish Companies, Corporate Social Responsibilty and Environmental Management, September 2003, 10, 153-164.
Heemskerk, B; Pistorio, P.; Scicluna, M. Sustainable Development Reporting: Striking the Balance, WBCSD. 2002.
Kolk, Ans. A Decade of Sustainability Reporting: Developments and Significance, International Journal of Environment and Sustainable Development, 2004, 3, (1), 51-64.
Laszlo, Kathia C. The Evolution of Business: Learning, Innovation, and Sustainability in the Twenty-First Century, World Futures, 2003, 59, 605–614.
Palframan, Diane. Commitment Management Builds Sustainable Enterprises, The Conference Board, No. 140, March 2005.
Perrini, Francesco. The Practitioner's Perspective on Non-Financial Reporting, California Management Review, Winter 2006,48, (2), 73-103.
Responsible Care Management Framework. CEFIC, Issue 1, 23/6/2005.
Salzman, O.; Ionescu-Somers, A.; Steger, U. The Business Case for Corporate Sustainability: Literature Review and Research Options, European Management Journal, February 2005, 23, (1), 27-36.
Slater, Alyson; Gilbert, Sean. The Evolution of Business Reporting: Make Room for Sustainability Disclosure, Environmental Quality Management, Autumn 2004, 41-44.
The Sustainability Reporting Toolkit. www.sustainabilityreporting.ca/content
WBCSD, Young Managers Team, (YMT), UNEP FI Integration of environmental, social and governance issues, Switzerland, 2004.
Whiting, M. Armstrong; Bennett, Charles J. The Road to Sustainability: Business' First Steps, Research Report, The Conference Board, 2001.
www.junglerating.nl//english

THE DEVELOPMENT OF THE FOREIGN TRADE AS ONE OF THE ESSENTIAL CONDITIONS FOR THE GROWTH OF ECONOMY IN LITHUANIA

Rasa GLINSKIENĖ, Daiva BERŽINSKIENĖ, Birutė DARŠKEVIČIŪTĖ
Kaunas University of Technology Panevėžys Institute LITHUANIA
rasa.glinskiene@midi.ppf.ktu.lt, daiva.berzinskiene@ktu.lt, darabi@takas.lt

The analysis of the economically developed states, which have a comparatively small internal market economy, indicates that the most efficient way to ensure a stable economical growth is the development of the foreign trade.

The political and economical situation in Lithuania makes us realize that such a small country as Lithuania must actively improve and develop its foreign relations, since the welfare of a small country in most cases depends on the potential to integrate into the international environment. Therefore recently the international economic relations have been very significant to Lithuania. It should be noted that after Lithuania had stepped on the road to the market economy, it reoriented its international economic relations from the East to the West; furthermore the economic openness had been actively sped up by the country's preparation to become a member of the European Union (EU). The expansion of the EU on May 1st, 2004 has offered new opportunities to the country. While the EU membership expands Lithuanian trading markets and creates the preconditions to kick-start the foreign trade, an essential issue arises – how to use the openness of the separate countries in order to achieve the fast economic growth. Therefore the **objective** of this article is to analyze the potential of Lithuania in expanding the foreign trade. The **object** of the analysis is the set of issues related to the Lithuania foreign trade, while highlighting the most important tendencies, raising the fundamental problems, providing the analysis of the volume and framework of the Lithuanian foreign trade. The research has been completed by applying the **methods** of the analysis of the scientific literature and the analysis of the statistical data.

Key words: *foreign trade, export, import, export structure, import structure*

1. Lithuanian economic review

Fifteen years after the restoration of Independence of the Republic of Lithuania in the history of the state is a very short period of time. However this is precisely the period when the state and new market economy, new legal, economical and political structures had been established. During the first decade of the restoration of Independence Lithuanian economy progressed from planned-command economical system to market economy and reoriented its external relations from the East to the West.

During the latter fifteen years Lithuanian economy sustained major changes in all sectors. There are four stages, evident in the development of the economy:

- The first stage – from 1991 till 1994 – of dramatic decline of the economy, characteristic to post-communistic states;

- The second stage – from 1995 till 1998 – is the period of recuperation, during which the economy not only stabilized, but also boomed;
- The third stage – from 1999 till 2000 – is the period of the economical recession, which took place after the Russian crisis;
- The fourth stage – from 2001 till 2004 – is the period of outbreak of the economical growth, of fast economical growth rates and membership in the EU;
- The fifth stage – from 2004 – is the period of the membership in the EU, associated with the EU structural support funds application problems.

Radical reform of the economy has cost a lot. After the announcement of Independence substantial liberalization and privatization reforms had been started. They generated one of the biggest declines in production in the Middle and Eastern Europe. In 1993 the actual gross domestic product (GDP) constituted only 60 % of GDP level in 1989, and inflation was up by more than 1000%. Only on introduction of the national currency – Litas – and on implementation of currency administration model the economy has started to grow in 1994. In 1995 the growth of GDP comprised 3%. The economy averagely (from 1995 till 2002) grew five times faster than the economy of the EU (average annual growth of GDP was 5,3 %).

During the 2nd half-year of 1998 and 1999 Lithuanian economy sustained powerful impact of the financial-economical Russian crisis. In 1999 GDP growth rate diminished to 3,9%. The Russian crisis strongly affected relations of Lithuanian foreign trade (the export to Russia in 1999, in comparison with 1998, has diminished by more than 70 %, and it had an especially painful effect on Lithuanian companies, small and medium business and the sectors of economy.

In 1999 the memorandum of the economic policy of the Government of the Republic of Lithuania was passed, where the policy of the Government of Lithuania and the Bank of Lithuania had been set down for the period of 1999-2001, and later the policy had also been set down in 2002, which was supported by the International Monetary Fund. The strategic objectives of this policy are to stabilize macroeconomics and to proceed with the transition of Lithuania into functioning market economy and membership in the EU. After the application of these measures there were no significant changes in 2000, which could initiate faster GDP growth rates. From the structural aspect the economy unbalanced even further: the wage growth rates had declined up to 5,0%, the income of population declined by 5,5%, as did the consumption. It affected the internal market. The vulnerable internal market and poor payable demand of residents prevented the generation of better real GDP and slowed the investment process.

Despite the difficulties, during the period from 2001 till 2003 there were significant changes in the economy of Lithuania: the level of the openness and liberalization of the economy had significantly grown, the private sector gained more ground and the competition had increased. Structural reforms influenced fast growth of working efficiency. The process of the economical integration into the EU was also continuing. Due to the fast growth of the volume of the foreign trade, the export had been reoriented from the CIS to the EU market, which now had approximately 50% Lithuanian export. The year 2003 was the year of the outbreak of the Lithuanian economy. The success of the Lithuanian economy in the latter years had also been emphasized by international organizations (IMF, European Bank for Reconstruction and Development, the Chairman of the Polish Monetary Policy Board).

The actual growth of GDP, based not only on the export growth, but also on the recovered internal market, in 2003 was 9,7 %. These fast rates were the highest among the EU and candidate states. The main factor of GDP growth during the latter years was the export, which grew by almost 20% annually. In 2001 the export had increased by 20,3%, and import had increased by 16,4%. In 2003 the prosperity of the sectors of economy, oriented towards the internal market, showed for the first time during a long period of time: the sectors of electricity, gas and water supply, construction, transportation, hotels and restaurants and even the agricultural sector. The great influence on the prosperity of the agriculture had been exerted by rapid growth of the export of food and agricultural products to the CIS countries and the grown buying of the animal products. Furthermore, during the latter years work efficiency had also been growing in Lithuania. The competitiveness of the economy, as it is known, is influenced by the work efficiency/ wage ratio. However one of the slowest growing indicators was the real wage, which in the period from 2000 till 2002 increased by only 0,3%. The main reason for this was the high unemployment rate. Foreign investments had also been recovered in 2002. They, in comparison with the year 2001, had actually grown 8,8 times. This also influenced the growth of GDP. However due to the small capacity of the internal market, poor payable demand of residents and poorly expanded credits, in 2003, in comparison with the year 2002, direct foreign investments had diminished 3,5 times.

In 2004 the rapid economical growth of the latter years was continuing. In 2004 GDP reached LTL 61,9 billion, and the growth of GDP was 6,7 %, in comparison with the year 2003. The highest rise was achieved in the activity lines, which were related to production and consumption: industry, wholesale and retail trade. One of the indicators of the rising economy is investment, grown by 12,6 %, in comparison with the year 2003. In 2004 there were LTL 10096,8 million invested in the territory of the country. The export of goods during the year had grown by 21,0%, and import had grown by 15,8%.

A strong positive impulse, which was delivered after Lithuania joined the European Union, for the present utterly compensates the negative influence of recent unfavorable phenomenon, i.e. the growing shortage of the qualified work force, rising prices of the energy carriers and some of the important raw materials, and the increasing competitive pressure of Asian companies. Furthermore, the statistical surveys (2005) somewhat showed an unexpected growth of the number of the employed people (the employment level among the residents of senior age had substantially increased). Its influence on the growth of GDP was further increased by favorable relocation of employees – the number of employees in the agricultural sector where work efficiency is much lower that the average of the country's economy had decreased.

It is natural that during the first years of Lithuania's membership in the European Union the positive effect of the integration due to cancellation of some customs-houses, significant improvement in export conditions and the grown support of the structural funds was detectable most. Thus far the borrowing boom does not yet subside, and it stimulates the development of construction, internal trade and banking sectors.

The outline of Lithuanian foreign trade

In May 2004 Lithuania has become a member of the European Union (hereinafter referred to as the EU). The EU, which consisted of fifteen countries (the EU-15), now became a group of twenty five countries (the EU-25). The integration of Lithuanian into the EU affected the whole Lithuanian economy, including Lithuanian foreign trade relations.

The volume of Lithuania's export during the latter six years had grown by 134%: from LTL 11 billion in 1999 to LTL 25,8 billion in 2004. The dynamics of Lithuania's export during the period of 1999–2004 is presented in Table 1.1.

Table 1.1: Lithuanian export (LTL, million.) and its change (%) in 1999-2004

	1999	2000	2001	2002	2003	2004
LTL, million	11014,7	14193,2	17117,2	19117,4	21262,6	25819,2
%	-25,8	28,9	20,6	11,7	11,2	21,4

Data source: Department of Statistics to the Government of the Republic of Lithuania (hereinafter referred to as Statistics Lithuania)

The data in Table 1.1 indicates that the lowest volume of export was in 1999. In 1999, in comparison with 1998, the volume of Lithuania's export had actually decreased by 25,8% because of the Russian crisis. During the period of 2000–2004 the export volume had been though not gradually but steadily increasing: in 2000 the highest growth of export volume had been registered and it reached 28,9%, meanwhile during the period of 2002–2003 export volume increased by 11–12%. In the year 2004, which was the year, when Lithuania became a member of the EU, export volume notably grew again. The export of the country during the period from 1999 till 2003 had increased by 93%, i.e. it annually grew by 18,6% on average. In 2004 Lithuania's export volume growth amounted to 21,4% and was by 2,8 % of the point higher than the average export growth during the period from 1999 till 2003.

After joining the EU, during the 2nd half-year of 2004, in comparison with the same period in 2003 (see Table 1.2) the export volume had increased by 25,6%, whereas before joining the EU, during the 1st half-year of 2004, in comparison with the 1st half-year of 2003, the growth of the export volume was only 16,7%. The dynamics of Lithuania's export volume during the first half-years of the period from 2003 till 2005 are presented in Table 1.2.

Table 1.2: Lithuanian export: data of half-years of 2003-2005 and annual data of 2003-2004

	Export (LTL, million)		
	1st half-year	2nd half-year	Annual data
2003	9973,1	11289,5	21262,6
2004	11635,8	14183,4	25819,2
Change (in 2004, in comparison with the same period in 2003)	16,7%	25,6%	21,4%
2005	14451,9	-	-
Change (in 2005, in comparison with the same period in 2004)	24,2%		

Data source: comprised by the author basing on the data of Statistics Lithuania

The data in Table 1.2 indicates that the faster growth of Lithuanian export than the growth before joining the EU was also registered during the first half-year of 2005: in January-June of 2005, in comparison with the same period in 2004, export volume had increased by more than 24%. During the first six months of the year 2005 the export growth was by 5,6% point higher than the average export growth of the country during the period from 1999 till 2003. During the 1st half-year of 2005 the largest share of the production was exported during the month of May (LTL 2657 million). The total volume of the production export during the first six months of 2005 was LTL 14452 million.

The analysis of Lithuania's export data allows proposing that Lithuania's joining the EU has had a positive influence on the growth of the countries export volumes. After Lithuania joined the EU, the growth of export during the period from July of 2004 till June of 2005, in comparison with the same period from 2003 till 2004, was by one third faster than the average export growth during the period from 1999 till 2003.

2. Lithuania's main export partners

The analysis of the country's foreign trade from the regional approach allows observing that the block of the EU states both during the period of 1999–2004 and the 1st half-year of 2005 was the most important Lithuania's export and important partner according to trade volumes. From 2004 the block of the CIS countries firmly placed itself in the second place of the list of the most important Lithuania's foreign trade partners. The change in the share of the country's export to the EU, CIS, EFTA and other countries during the period from 1999 till 2004 and the 1st half-year of 2005 is presented in Diagram 1.1.

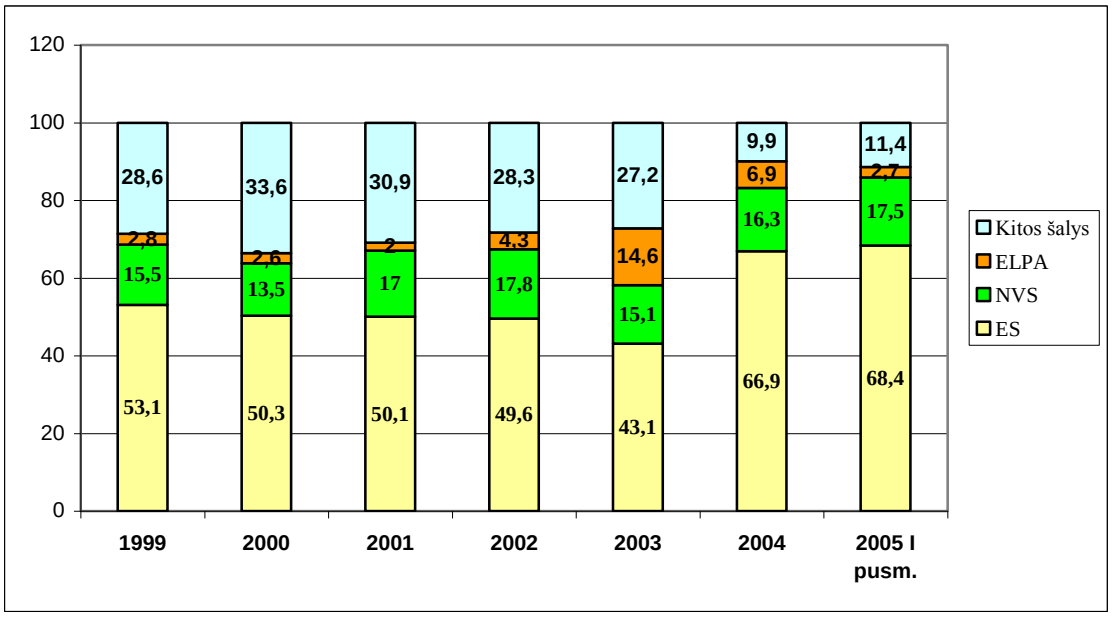


Diagram 1.1 The change in the share of Lithuania's export to the EU, CIS, EFTA and other countries during the period from 1999 till 2004 and the 1st half-year of 2005 (%).
Data source: comprised by the author basing on the data of Statistics Lithuania

The data in Diagram 1.1 indicates that Lithuania's export share to different groups of countries during the period from 1999 till 2002 though did change, but remained comparably stable: approximately one half of Lithuania's export had been exported to the EU countries, 16% of production was exported to the CIS countries, approximately 3% were exported to the countries of EFTA, and other countries received approximately 31% of all Lithuania's export. The huge changes took place in the period from 2003 till 2004, when the share of export to EFTA and other countries had significantly decreased, and the share of Lithuania's export to the EU countries had increased. It must be noted, that the share of the export to the block of the CIS countries remained rather stable during the whole period from 1995 till 2005 and had been fluctuating from 13,5% in 2000 to 17,8% in 2002. It must also be noted that till the year 1998 the main Lithuania's partner in foreign trade was the block of the CIS countries. It leads to a conclusion that Lithuania's membership in the EU and the change in the trade regime with the CIS countries had no significant impact on the trade with the block of these countries.

The largest contribution to the increase in the export share to EFTA countries in 2003 was made by the diversion of the export of mineral products from Great Britain to one of EFTA countries, i.e. Switzerland.

Until Lithuania's admission to the EU, Lithuania had been actively trading with the neighboring countries, i.e. Latvia, Estonia and Poland, which were one of the main Lithuania's export partners. A big increase of the export share into countries of the EU in 2004 may be linked to the increase of the number of the EU member states. In order to be more precise in evaluating the changes in Lithuania's trade conditioned by integration to the EU, the EU countries should be grouped into two groups: the EU-15 (countries the old-timers of the EU) and the EU-10 (new countries, which joined the EU on May 1, 2004). The change in Lithuania's export share to the EU-15, EU-10 and EU-25 country groups by half-years is presented in Diagram 1.2.

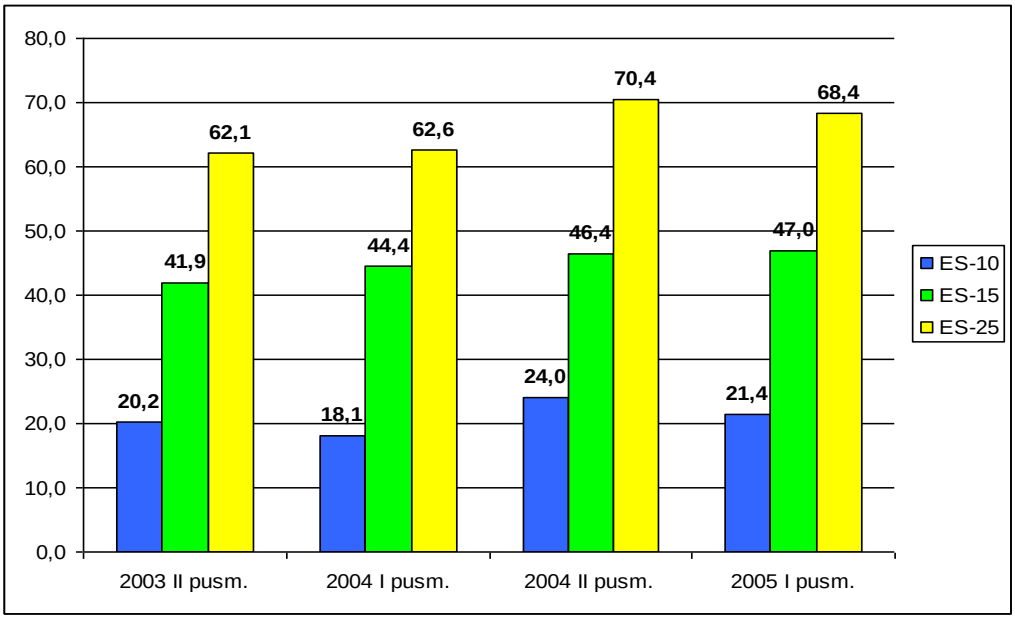


Diagram 1.2 The change in Lithuania's export share to the EU-25, EU-15 and EU-10 during the period of the 2nd half-year of 2003 till the 1st half-year of 2005 (%).
Data source: comprised by the author basing on the data of Statistics Lithuania

It is easy to notice, that the EU had already become the major trade partner of Lithuania, which together with the countries, which joined the EU in 2004, has a 70% share of all country's foreign trade turnover. The data in Diagram 1.2 indicates that after joining the EU Lithuanian exporters had increased the share of the exported production both to the EU old-timer countries and the new EU members. During the 2nd half of 2004 the share of export to the EU-15, in comparison with the corresponding period of 2003, increased by 4,5 per cent points, and to the EU-10 it increased by 3,8 per cent points. Lithuania's export share to the EU-15 and EU-10 during the 1st half of 2005, in comparison with the corresponding period of 2004, respectively increased by 2,6 and 3,3 per cent point.

The analysis of the changes in the share of the export volume to separate countries of the EU shows that during the period from 2003 till 2005 (using the data of the 1st half-years) the export share to Denmark, England, Latvia, Hungary and Germany had decreased. The export share to Belgium, Spain, Poland and France had been gradually increasing. During the 1st half-year of 2005, in comparison with the corresponding period of 2004, the share of the export share to the following countries had decreased most: Germany (-2,5 per cent points), England (-2 per cent points), Latvia (-1,2 per cent point) and the Netherlands (-1,1 per cent point); the export share to the following countries had increased most: Spain (3 cent points), Estonia (2,1 cent points), France (1,5 cent point) and Poland (1,4 cent point). The change in Lithuania's export share to separate countries of the EU, expressed in per cent from the total export to the EU in 2003, 2004 and 2005 (using the data of the 1st half-years) is reflected in Diagram 1.3.

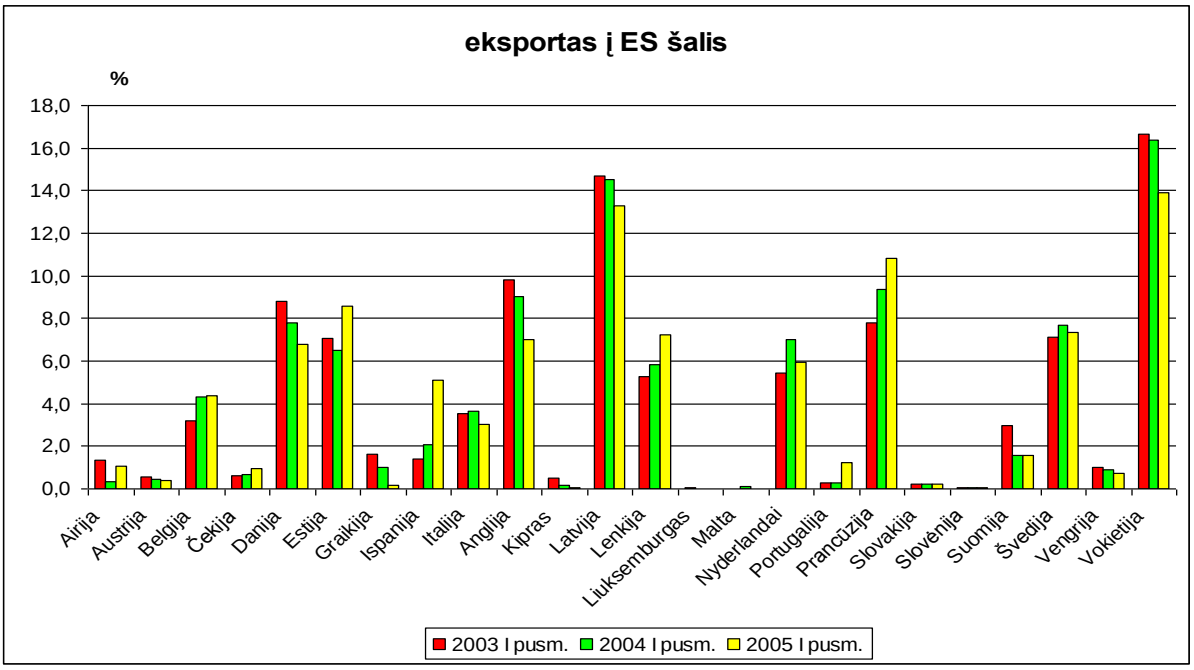


Diagram 1.3 Lithuania's export to the EU countries (%)
Data source: comprised by the authors basing on the data of Statistics Lithuania

It must be noted that during the period of 1999-2002 the main foreign trade partners were England and Germany. Already during the 1st half-year of 2001, in comparison with the same period of 2000, Lithuania's export to England increased more than 3 times and amounted to LTL 537,5 million, or 12,5% of all country's export. The greatest influence on the growth of

export to England was exerted by the export of mineral products, which at the time increased 13 times. Besides oil products the export volume to the United Kingdom increased by 32,4%, and was in the 5th place after Germany, Russia, Latvia and Denmark. In 2002 Great Britain had 13,4% of our country's export. Although the export of mineral products to this country went down because of the practically terminated trade relations of the new "Mažeikių nafta" concern "Jukos" with "British Petroleum", the export of other goods, in comparison with the year 2001, had increased by 30,7%. It is the only EU state, where Lithuania, in comparison with the import, had the export surplus (52,6% of the turnover). In 2003 Lithuania exported to the UK already 1,9 times less than in 2002. Though in the latter year the export share had been diminishing, it is may be assumed, that this abovementioned market is perspective. As already mentioned before, during the period from 1999 till 2002 Germany was also one of the main Lithuania's trade partners. Starting from 1994 and till 2001 the export of Lithuanian goods to Germany had been constantly growing and in 2001 the export volume to this country had reached its maximum worth, i.e. LTL 2 303,1 million (it comprised 12,6% of all Lithuania's export). However, in 2002 Lithuania's export to Germany diminished by 9,1%. According to some of Lithuanian economists, in consequence of the currently aggravated economic condition of Germany and the reduced purchasing power of the population, big positive changes of Lithuania's export to this country should not be expected.

The block of the CIS countries is the second most important Lithuania's export partner. The largest share of the goods export to the CIS countries during the period from 1999 till 2004 belonged to Russia, Belarus and Ukraine. During the analyzed period the share of the export to these three countries fluctuated from 12,1% to 16,8% of all Lithuanian export. Among all CIS countries the largest share of Lithuanian export falls for Russia. A rather rapid growth of the export share to Russia during the period from 2001 till 2002 had decreased in 2003. However, starting from the year 2004, the tendency of the growth of the export share to Russia is observed again. The main merchandise categories of Lithuania's export to Russia are these: machinery and mechanical equipment; over ground vehicles; milk and diary products; prepared food products; textile and textile articles.

Unlike Russia, the change in the export share to Belarus and Ukraine during the period from 2001 till 2004 was comparably small. After Lithuania joined the EU there was almost no change in the export share to these countries: the export share to Ukraine in 2004, in comparison with the year 2003, had not changed at all, and the export share to Belarus had increased by 0,4 per cent point.

In 2004, comparing to 2003, the significance of other third countries as the foreign trade partners of Lithuania, had decreased (see Diagram 1.1). This was in part influenced by the fact that some of the countries, with which Lithuania actively expanded the trade, had become the EU member states. On the other hand, it was also influenced by the change in conditions of the trade with the third countries.

Starting from 2004 a comparably small part of goods is exported to the third countries (to all countries, except the EU, EFTA and CIS countries). To date one of the biggest world markets – Japan to Lithuanian exporters is yet hardly known, besides, very high production requirements also prevent the export of goods to Japan. China should also be highlighted among other third countries, although this country, because of the lower productions costs, to Lithuania is more important as an import partner, but not the export partner.

The USA is the largest export partner among all third countries. In 2004 the export to USA constituted 48% of all Lithuanian export to other third countries. During the first half-year of 2005 according to its significance the USA was the ninth export partner of Lithuania. The export of Lithuania to USA mostly comprised of milk and diary products, honey, animal products, also textile and textile articles, timber and its articles, products of plastic art and chemical products. It must be noted that Lithuania imported (the import according to the country of origin of the merchandise) merchandise from the USA, worth LTL 893,1 million. Comparing to 2002, the import had grown by 9%. In 2003 Lithuania's import from the USA comprised 2,98% of all Lithuania's import, i.e. the USA also took the 9th place among import partners.

3. The analysis of the export of merchandise categories

The analysis of Lithuanian foreign trade according to the merchandise categories shows that there are branches in the country, which are successfully competing, at least in the short-term perspective, in the foreign market and even in the market of the EU, however the tendencies are observed, which are not favorable to Lithuania. The most important tendency is that the structure of Lithuania's export by branches is characteristic to developing countries. The comparative weight of the modern branches, which generate a lot of additional value, is not big in it, and during the export the branches, which are receptive to inefficient work, natural resources and energy, are predominant (Diagram 1.4).

As the diagram shows, there are a lot of mineral products - oil and its products both imported and exported. This trade is directly related to one Lithuanian company („Mažeikių nafta"). The performance of this company determines, if the export and import are to grow or not.

A large share of Lithuania's export and import is constituted by the export and import of vehicles. In 2001 the import of vehicles amounted to LTL 2,9 billion, and the export amounted to LTL 1,7 billion, in 2002 the import of vehicles amounted to LTL 4,6 billion, and the export amounted to LTL 3,2 billion. As it is shown, in 2002 the export of vehicles had increased almost double during the year. This jump was influenced by two reasons: 1) the further growing re-export of cars to the CIS countries; 2) intensive activities of the dockyards. It must be noted that more than a half of the imported vehicles had been re-exported. The significance of the re-export is also fairly big on other branches. The positive balance of transportation services is also the result of the re-export. The significant role of the re-export and related services in the economy of Lithuania enables the acquisition of an important competitive advantage from the services of merchandise transit.

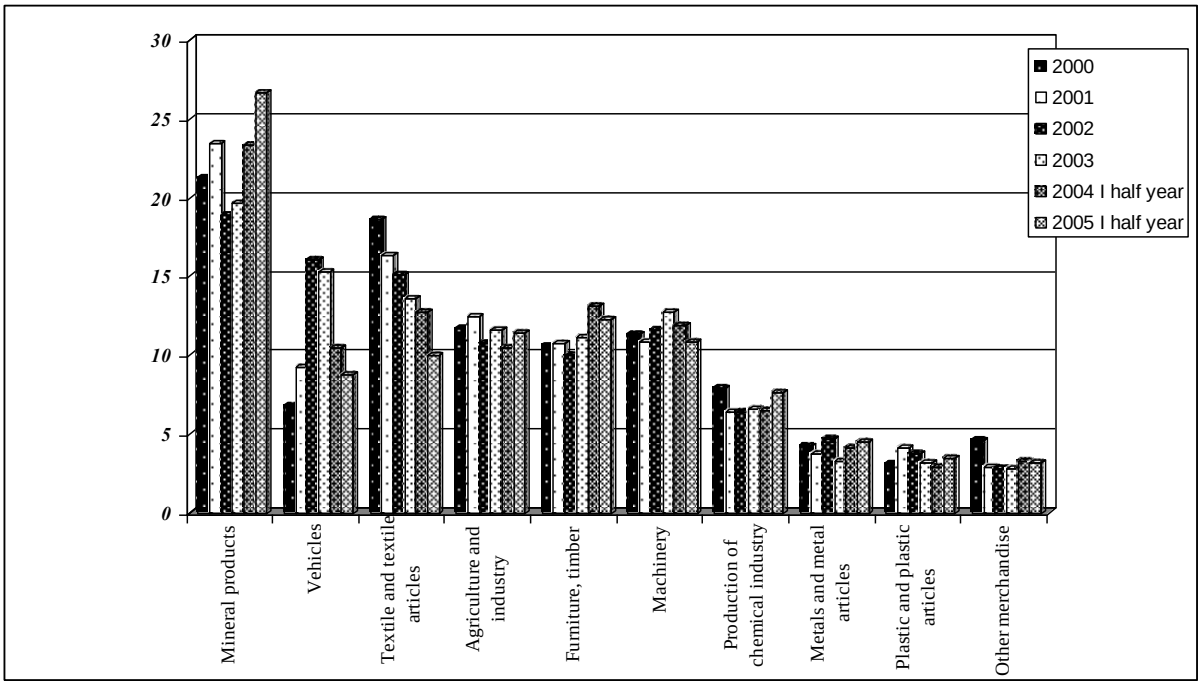


Diagram 1.4. The structure of Lithuania's export according to merchandise categories during the period from 2000 till 2003, in 2004 and the 1st hal year of 2005 (%)
Data source: Statistics Lithuania; Lithuanian Macroeconomic Review 1(17), 2004

The third important export and import merchandise is textile and sewing articles. In 2001 their export share was 15,1%, and their import share was 7,9%, respectively in 2003 these numbers were 13,6% and 7,4%. During the period from 1996 till 2001 the export of textile articles had grown by 44%. It is the export, based on cheap work force, which, on Lithuania's joining the EU and due to the rising cost of the work force, has limited perspectives. Recently the share of this merchandise in the total export decreased by 1,3%.

The comparative weight of the export of agricultural and food products is also rather big. There are a lot of raw animal products exported, especially dairy products. It must be noted that Lithuania imports increasingly more food products and drinks of high additional value, prepared for consumption than it does export them. It is indicated not by the circumstance that Lithuania imports a lot of products, prepared for consumption (more than half of the import is comprised of vegetables, fruit, drinks and tobacco), but by the fact that it exports little of such products.

The chemical industry is another important export branch, where the generated additional value is comparably low, and the export of which amounted to 6,6% of all export in 2002.

There are not many branches and modern high-tech, which generate high additional value, in the export of Lithuania. After the crisis of 1999, the export of machinery and equipment and various devices has been recovering little by little.

At the start of 2002 the indicators of the foreign trade had been downgraded by the fall in prices – the average export and import prices during the year had respectively decreased by 6,3% and 4,8%.

In summary of the analysis of the Lithuanian trade it must be emphasized that it will be difficult for Lithuania to keep the pace of the export growth if the structure of the export branches does not change and there is no increase of merchandise, which has higher additional value. If the costs of the primary resources (raw material, raw force) rise, the production costs will also increase, and the export of Lithuania shall find it difficult to compete against the cheap export from the countries, where costs are low. The structure of the export may be optimized by promoting the establishment and development of new sectors and by restructuring currently active sectors. Increasing the comparative weight of merchandise, manufactured in Lithuania, should gradually restructure even the sector of the apparel sewing, prospering at the time. The attention should be paid to the circumstance that a large share of Lithuania's exports faces the problem of the business cycle fluctuation therefore the export is not expanded gradually. Such fluctuations are less common to the high-tech branches therefore the change in the structure of the export will increase its stability as well.

Furthermore, in the description of the research on the investment climate in Lithuania the World Bank emphasized that it is important to develop industrial high-tech branches by support of scientific applied research and by accordingly orienting the system of science and education system. The largest share of the products, exported from Lithuania, is comprised of almost only the production of the traditional branches of industry, therefore the country faces the risk to become over dependant on the import of raw materials and energy resources.
The possibilities of the export of Lithuania's branches of economy within certain markets

On the completion of evaluation of Lithuania's trade relations with foreign countries and on the completion of the foreign trade analysis from the regional viewpoint and the analysis of the export structure according to merchandise categories, there are four groups of countries set, which can be determined depending on their attractiveness to export the production, which is manufactured in Lithuania.

The EU countries, which are the main partners of Lithuania's foreign trade, are classified as the first group, which has the highest level of attractiveness. After Lithuania joined the EU, the attractiveness of the EU export market had increased because of the cancellation of custom duties and other limitations applied for the trade among the EU countries. The production, which meets the technical and other requirements raised by the EU, can be sold without any obstacles in any country of the EU.

The markets of both of the EU old-timers and new EU members are considered equally perspective. Germany, England, France, Denmark, Belgium, Holland, Spain and other old-timers of the EU attract Lithuania's exporters not only because of their proximity, but also due to rather large import volumes of these countries.

Among the ten new EU countries the most attractive export markets are the markets of the neighboring countries, i.e. the markets of Latvia, Estonia and Poland. To date exporters of the country have not yet fully taken advantage of the potential and possibilities of the Polish market. On the other hand, due to their proximity different Polish industrial companies are one the main competitors of Lithuanian industrial companies. The larger production scale of Polish manufacturers gives them a possibility to produce cheaper goods.

The EU countries are considered attractive to the exporters of the following manufactured goods: textile, oil, chemical, furniture, rubber and plastics, electrical and optical, paper and wood pulp goods. The food industry also has fairly good possibilities to expand the export in the EU markets, and it, in the opinion of experts, should pay more attention to the market researches in these countries and adaptation of the manufactured goods for the foreign consumers.

The following countries can be ascribed to the second less attractive from the viewpoint of export, however, a very important group: 1) Russia, Belarus and Ukraine; 2) countries of North America; 3) EFTA countries.

The proximity of Russian, Belarusian and Ukrainian markets and good knowledge of these markets make the abovementioned countries attractive for the export. The trade regime between Lithuania and the abovementioned countries, which changed after May 1, 2004, had ambiguous influence on Lithuania's foreign trade: the prices of some of the exported goods had jumped and the prices of some of the exported goods had fallen. The statistical data shows that in 2004, comparing to 2003, the export volume to all of the abovementioned countries increased by more than 30 per cent on average.

The markets of Russia, Belarus and Ukraine are considered attractive to the following industrial branches: food industry, machinery and equipment industry, chemical industry (pharmaceutics), paper industry, rubber and plastics industry, and electrical and optical industry. The attractiveness of the food industry is increased by subsidies paid for the exported production.

North America's market and the market of EFTA countries are also ascribed to the second group of countries. In 2004 the USA received 4,72%, and Canada received 0,91% of Lithuanian export. The attractiveness of the USA market because of the poor knowledge of this market and comparably long distance, in comparison with the easier reachable markets of Russia and Ukraine, is lesser. However due to its size and purchasing power the USA market still remains the strategically important market to Lithuanian exporters. After Lithuania joined the EU and there were changes made in the trade regime, there was an increase in the custom duties for some products, exported to the USA. The growth of export volumes (export volumes increased 2 times) in 2004, comparing to 2003, was most of all influenced by significant increase in the export of mineral products.

The experts note that because of the unfavorable dollar exchange rate the braches of food, timber, electrical and optical equipment and chemical industries only partially take advantage of the possibilities of the export growth in this market. Besides the abovementioned branches of industry the following branches of industry have good opportunities to increase the export volume in the USA market: furniture and timber industry, industry of paper and wood pulp articles and industry of non-metal mineral products. The EU and the USA are the largest economies of the world, which are increasingly becoming dependant on each other. It is likely that their cooperation will become stronger and will influence the origination of a more beneficial trade regime between both countries.

Among EFTA counties Norway is considered the most attractive country (especially for the industrial branch of vehicle manufacturing). There are good possibilities the companies of furniture and timber, electrical and optical equipment, vehicles, metal and metal articles and oil industries to increase the export in EFTA countries.

The European and CIS countries and the Asian countries, not mentioned in the first and second groups of the countries according to their attractiveness in respect of the export, are ascribed to the third group of countries. Although other European countries (e.g. Turkey, Romania and Bulgaria) do not have high purchasing power, however their size and proximity allows some of the experts consider them as the attractive markets.

Good representations of our country's manufacturing companies in other CIS countries and rather fair knowledge of them enable the markets of these countries to be attractive.

Long distances and poor knowledge of the markets of Asian countries aggravate the faster expansion of the export to these countries. Due to their size and purchasing power of the population Japan and South Korea are the most attractive markets of Asian countries from the viewpoint of the export. High quality requirements for the production imported into Japan are one of the greatest problems, met by Lithuanian exporters. The European Union is one of the major trade partners of Japan. Both countries are interested in intensive development of bilateral trade relations. This is confirmed by bilateral trade agreements, signed by both the EU and Japan, where closer cooperation and reduction of the trade barriers between both countries are set forth.

The countries of the third country group are most attractive to the branches of chemical (pharmaceutics), metal and metal articles, machinery and equipment industries and the branch of electrical and optical equipment industry, which generates high additional value. The attractiveness of Asia from the viewpoint of the export is increased by the import demands of certain merchandise groups (e.g. food, furniture, electronics, metal and steel) in the market of Japan and South Korea.

Lithuanian manufacturing companies have the most inferior export possibilities in the countries of the fourth group of attractiveness: the countries of South and Central Americas, the countries of Africa and Australia. Lithuanian companies' knowledge of these markets is very poor, and the distances are long and cultural differences are considerable. The attractiveness of these export markets has slightly increased after Lithuania joined the EU, since starting on the membership date Lithuania can use preferences, endowed in accordance with the EU agreements with the third countries.

After Lithuania joined the EU, more favorable trade conditions have become valid for the countries of the Mediterranean and Balkan regions. Nonetheless, the possibilities of the greatest share of the branches of the manufacturing industry to sell their production in these foreign markets are still considered doubtful.

4. Main conclusions

Currently the economic policy of Lithuania is based on the expansion model oriented towards export. It is likely that during the following couple of years the penetration of Lithuanian products into new markets of the EU and world markets will increase, and there will be a great demand for ecologic and natural products of high quality. The fast development of the country's industry provides stimulus for the whole economy: initiates the growth of the service sector, innovation and training. Lithuanian industry generates slightly more than one fourth of the country's GDP (in 2004 it generated 25,7% of total GDP), and it testifies its significance to the economic development of the country. Nonetheless it must be admitted that the productivity indicators of the most Lithuanian branches of manufacturing industry are significantly falling behind the respective indicators of other EU countries.

After Lithuania joined the EU, the conditions of the country's trade with other EU member states had improved. Lithuanian manufacturers, by manufacturing goods, which meet the requirements raised by the Community, can sell such goods without any limitations in the whole EU. After completing the analysis of the statistical data of Lithuanian export it may be presumed that Lithuania's membership in the European Union has had positive influence on the growth of the export volumes. During the period from July of 2004 and June of 2005 the growth of export, in comparison with the same period of 2003-2004, was by one third faster than the average export growth during the period of 1999–2003. The growth of export volumes during the first half-year of 2005 was also significantly higher that the average growth of export during the period of 1999–2003.

The analysis of the country's foreign trade from the regional approach allows observing that the block of the EU states both during the period of 1999–2004 and the 1st half-year of 2005 was the most important Lithuania's export partner and the block of the CIS was the second most important export partner. The largest share of the goods export to the CIS countries belongs to Russia, Belarus and Ukraine. Among other third countries the USA was the biggest Lithuania's export partner during the period of 2004 and the 1st half-year of 2005.

The structure of Lithuania's export indicates that according to separate merchandise groups the production of industry branches inclined towards natural resources and energy, e.g. oil, timber, metal and other manufacturing industries, predominate in the export. In the future the costs of raw materials will increase due to the increase in the global prices of energy resources. In order to withstand the still increasing competition, the companies of Lithuanian manufacturing industry must rapidly improve the quality of the work force, activate innovations and attract as many direct foreign investments, related to modern technologies, as possible, and to liberalize business environment. Lithuanian manufacturing industry is more oriented towards the foreign market than it is oriented towards the local market. It is indicated by larger and growing production share, sold in the foreign countries.

The export share, which in 1999 amounted to 53% of all production of the manufacturing industry, in 2004 had grown up to 60,3 %. Despite the growing consumption in the internal market, the experts forecast that in the nearest perspective the tendency of the growth of the share of the exported production will still be observed.

On the completion of evaluation of Lithuania's trade relations with foreign countries and on the completion of the foreign trade analysis from the regional viewpoint and the analysis of the export structure according to merchandise categories, there are four groups of countries set, which can be determined depending on their attractiveness to export the production, which is manufactured in Lithuania: I) the EU countries; II) Russia, Belarus and Ukraine and also countries of North America and EFTA countries; III) other European countries (Turkey, Romania and Bulgaria) and the CIS countries (Kazakhstan, Moldova, etc.); and IV) Asian countries; South and Central America, Africa and Australia.

In 2000 the Lisbon strategy had been adopted, the purpose of which is to turn the European Union into the most competitive and dynamic growth knowledge based economy in the world, where sustainable development would be harmonized with higher employment of better quality and more stable social cohesion. The experts that forecast the changes in European economy are rather unanimous in agreeing that due to growing globalization tendencies and acceleration of technology evolution a more significant weight will be gained by the knowledge economy and the service sector, and the large share of production, as it is deemed, will be moved outside the European boundaries. Knowledge, manufacturing of new products and improvement of production methods will become the engine for the EU economy.

References

1. JSC "Ekonominės konsultacijos ir tyrimai" (2004). **Lietuvos įstojimo į Europos sąjungą poveikio pramonės įmonėms studija**.
2. JSC "Ekonominės konsultacijos ir tyrimai" (2005). **Lietuvos užsienio prekybos pokyčiai ir plėtros galimybės**.
3. Lithuanian Institute of Agrarian Economics (2003). **Muitų politikos pokyčių dėl Lietuvos narystės ES poveikis šalies užsienio prekybai žemės ūkio ir maisto produktais.**
4. Ministry of Economy The Republic of Lithuania (2003).**Prekybos režimo pokyčių, Lietuvai tapus ES nare, su trečiosiomis šalimis 2002 metų importo ir eksporto duomenų pagrindu įvertinimas**.

5. Ginevičius R., Rakauskienė O.G., Patalavičius R. (2005). **Eksporto ir investicijų plėtra Lietuvoje.**
6. http://www.lrinka.lt/Pranesim/Prekyba.phtml
7. http://www.ukmin.lt
8. http://www.std.lt
9. http://www.ris.lt

INFLATION TARGETING POLICY AS A MONETARY POLICY INSTRUMENT IN DEVELOPING COUNTRIES

Serdar ALTINOK, Hakan ACET, Murat ÇETİNKAYA, Abdulkadir DEVELİ

Selçuk Üniversity, TURKEY
kadir_develi@yahoo.com

Since the early years of 1990, new frameworks and the economical preferences change has made countries approach inflation targeting adaptation. In this essay, besides the results and reasons of inflationary targeting, some problems occurred during inflation targeting have been discussed. That the inflation targeting is an implementation of a combined series of monetary policy requires demand, determination and firm follow-up and is a policy that can show desirable outcome appears to be an important result gained from the applications in recent years. Therefore, new frameworks and changes seen in economical preferences are found out to be useful strategic tool for countries.

Key Words: *Inflation targeting, central banks, monetary policy*

Introduction

At the beginning of 1970s, just after the crash of the Bretten Woods system, the announcement of direct inflation targeting implementation especially in the last ten years by a group of countries generated the most important change in the field of monetary policy.[16]

While New Zealand and Canada had implemented such inflation targeting policy, some developing countries and transition countries on the other hand implemented 'concurrency political strategies' that were used at more developed economies and that contain many elements of inflation targeting policy. For instance, Chile central bank set its financial targets for inflation in 1990 and Israel central bank in 1991. Czech Republic and Korea in 1998, Poland, Brazil and Colombia in 1999, South Africa and Thailand in 2000 approached a monetary policy stabilized around a numeric inflation target.

According to academic society, there is not a full agreement on whether a direct inflation targeting regime driven monetary policy achieves the expected goals or not.

On the other hand, applicability of such regime in developing countries is a different topic of discussion. Within this context, definition of inflation targeting and nature of inflation targeting regime are overviewed and preconditions of inflation targeting that features in literature is discussed in the first chapter of the study. Afterwards, problems and results occurred while implementing the inflation targeting policy in developing countries and the advantages and disadvantages have been researched carefully.

[16] Orphanides, A. and Wieland, V., *Inflation Zone Targeting*, **European Economic Review**, Vol. 44, 2000, p. 1351-1352.

1. WHAT IS INFLATION TARGETING?

The first question about inflation targeting policy is related with the definition of inflation targeting. Inflation targeting policy is a monetary policy, in which a central bank estimates a projected or target inflation rate that aims to provide and maintain the stability of price and bases the monetary policy to a specified numerical inflation target or to an interval target within a reasonable period and announcing it to public[17]. Inflation targeting policy is accepted as an instrument for reaching to low inflation rate and to a clearer and more transparent running monetary policy[18].

Even though there has not been an agreement among the economists on distinguishing between the inflation targeting and other political strategies; some criteria that are accepted in general are being used. The criteria presented by Mishkin and Savastano are; announcing a numerical inflation target to public, commitment on price stability as being the most crucial aim of this policy, using a strategy that contains information (for instance described as; not based on to the monetary sum or to the interest change estimated by the central bank) and adopting the responsibility along with wide range of transparency[19]. Implemented inflation targeting policies are being characterized by possessing the wide range features of transparency and responsibility [20].

These criteria are accepted in general as they reflect the core of inflation targeting. Some banks such as Sweden and Europe Central Banks assuming them as they were the decision-making bodies of inflation targeting fulfill these criteria. Besides, Bundensbank indicates that these criteria reflect the spirit of monetary targeting strategy used till the advertising of European Monetary Union (EMU) strategy perfectly. However these criteria are not enough to describe the structure of inflation targeting policy in a formal way as some of them are indefinite. For example, it is not possible to state what "wide range of transparency", which is necessary for inflation targeting and is getting more important in recent years, completely describes. Most importantly, the content and the description of the current inflation targeting have been changing in the course of time[21].

That the definition of inflation targeting application has not been done definitely in one hand and the uncertainty of the criteria that will be used for the application and its complication on the other hand cause the central banks approach to this policy with doubt. This situation leads the central banks to adopt or carry on least demanded strategies.

---

[17] Alparslan, M., Erdonmez, P. A., *Inflation Targeting*, **Bankacilar Dergisi**, Issue 35, TBB, 2000, p. 3.
[18] Oktar, S., *Reliability of Inflation Targeting Monetary Policy and Price Stability*, Science and Technology Publishing House, Ankara, 1998, p. 27.
[19] (a) Mishkin, F. S., *Inflation Targeting in Emerging-Market Countries*, **American Economic Review**, Vol. 90, 2000, p. 105.
(b) Mishkin, F. S. and Savastano, M., *Monetary Policy Strategies for Latin America*, **NBER Working Paper** 7617, 2000.
[20] Svensson, L. E. O., *Inflation Targeting as a Monetary Policy Rule*, **Journal of Monetary Economics**, Vol. 43, 1999, p. 631-632.
[21] Amato, J. D. And Gerlach, S., *Inflation Targeting in Emerging Market and Transition Economies: Lessons After a Decade*, **European Economic Review**, Vol. 46, Issues 4-5, May 2002, p. 782.

1.1. Prerequisites of Inflation Targeting Regime

The concept of prerequisite in developing countries' inflation targeting literature plays an important role. One of the most important prerequisite is that the freedom of central bank. Different indicators are taken into account for the measurement of "freedom". As a result of the empirical studies including the concepts of responsibility, independency and credit worthiness and deeply containing the financial market of OECD countries; it is observed that when independency increases level of inflation and variation decrease, however, even though a parallelism between independency and responsibility is expected a reverse relation has been observed. In other words, as the central bank's independency is becoming lesser, governments dictate the targets and related conditions in the contracts of central banks; in return to this, central banks become obliged to make more explanations and have more liabilities. For this reason central bank's status being independent from the government, more than half of central bank's board of directors being appointed autonomously and not having a representative from the government are important criteria of independency of the central banks[22]. Accordingly, it is only possible for the central banks, to follow up any political regulation considering the price stability and forming up the inflation expectation of public; when the influence channels of government are closed in so far. This condition absorbs itself in countries which passes to inflation targeting system openly and becomes an important indicator of success in practice[23].

A proper finance policy is seen as a prerequisite which is being referred to frequently. It is possible to limit the appeal to the resources of central bank by the government in order to cover the deficit of public with laws. Covering the deficit of public and taking necessary precautions for the financial needs are among the duties of political authority. Unchecked public expense may cause important price movements. Huge budget deficit in many developing countries in the past seems to cause high and changeable inflation rate. For this reason, changes in expenses of public can cause big changes on expectations of inflation and on inflation rate. The financial inadequacy of covering the public deficit brings about the extreme increase of the prices on products manufactured by public and their service. This situation is much more important for developing countries in which the transportation, electricity and fuel prices are being adjusted by the government. For this reason, changes in the prices that are under the control of government and prices on subvention can make sudden and huge effect on inflation.

On the other hand, public debts are also seemed to be another problem on the implementation of inflation targeting policy as public can be made advantageous by changing the structure and due date of the debt in an inflationary environment. This also increases the inflation and the nominal interest rate. If the central bank continues the high inflation, real interest rates will increase, growth rate will decrease and debts dynamics will be unstable. Poor financial policies will contribute to shorten the debts due date structure so the government will manage a shorter term. This also creates a trust crisis and an increasing risk of intervention of the central bank to some part or whole public debt.

[22] Karasoy, A., Saygili, M., Yalcin, C., Policy of Direct Targeting of Inflation and Experiences of Some Countries, **Central Bank of The Republic of Turkey, Discussion Declaration**, No: 9801, Ankara, 1998, p. 8-9.
[23] Malatyali, N. K., Inflation Targeting, Samples of Country Applications and Applicability in Turkey, **DPT Publications,** Ankara, 1998, p. 14-15.

Another prerequisite is that the need of resistance of the economy towards the change in exchange rates and in interest rates[24]. The monetary policy in inflation targeting, the currency which is not suitable to lead a stable outer-value can result in big exchange rate changes. This seems to be a potential problem since in most developing countries capital market is not that deep which might cause the companies, households and government go into debt with foreign exchange. In such condition, changes in exchange rate will have sudden effects on their financial statements. Central bank under the inflation targeting may need to increase the short term interest rate suddenly in order to reach the targets as a reaction to amortization. This case would bring important effects on the banks' profitability and the weakness in banking sector might cause a crucial problem to reach the inflation target.

As the inflation targeting is a monetary strategy onwards, the topic about the need of econometric models of inflation period and transition mechanism is frequently argued. It is pronounced that the ones who form the politics can decide about the proper interest rate that fits the current economical conditions only with these models[25].

When deciding about the importance of these prerequisites for inflation targeting, the overall applicability of their monetary policies should be kept in mind. Instrument independency is a desired situation under the stabile exchange rate or monetary targeting regime. Exchange currency crisis, weak public finance and banking systems and big debt of exchange currency were experienced in some countries of Europe in 1992-1993 and 1997-1998 in Asia providing many evidences that the dependability towards the regime of stable foreign exchange rate was damaged. Huge public debts and also loaning from abroad create problems in monetary targeting. Especially as it is seen in Table-1, financial discipline has been neglected. It is also hard to accommodate the econometric models used in inflation targeting with the current experiences of the country. After the monetary crisis and the downturn of the stable exchange rates in Europe in 1992-1993, most of the Central Banks of European Countries implementing inflation targeting did not trust in the econometric models either.

Table 1: Financial Balance of the Countries Applying Inflation Targeting
(Rate in the Year of Application %)
Source: IMF, *World Economic Outlook*, May 2001

Country	**Application Year**	**Financial Balance in the Year of Application**	Country	**Application Year**	**Financial Balance in the Year of Application**
Sweden	1992	- 9.76	Israel	1991	- 4.35
Finland	1992	- 8.11	Australia	1993	- 3.90
United Kingdom	1992	- 7.24	South Africa	2000	- 2.65
Brazil	1992	- 6.89	Thailand	2000	- 2.24
Poland	1992	- 4.98	New Zealand	1990	- 1.68
Canada	1990	- 4.93	Czech Republic	1998	- 1.63
Spain	1992	- 4.92	Chile	1990	3.48

[24] Mishkin, F. S., a.g.e., p. 106-107.
[25] Amato, J. D. And Gerlach, S., a.g.e., p. 783-784.

.

For the implementation of inflation targeting policy, rather than meeting the requirements of prerequisites, how much desirous the central bank is to meet the requirements, in other words, the need of describing the rigidity level of corporate concept and aims should be determining.

1.2. Special Problems for the Developing Countries

Some developing countries implemented the inflation targeting policy successfully. However, it brought out some important problems like, the adaptation of this policy concept in developing countries, exchange rate targets, choice of price index and level of targets.

1.2.1. Policies Contain Exchange Rate Targets

One of the basic questions about the implementation of inflation targeting policy is that how much value the central bank should give to the exchange rate. The central banks of developing countries implementing the inflation targeting policy assert that the fluctuations in exchange rates for reaching the inflation targets should be interfered[26]. The interference to the exchange rates might be useful only when the credit worthiness of the monetary authority is lost and needs to be regained[27]. For this reason, mid-term exchange rate targeting is avoided. However a group of central banks in developing countries adopted an inflation targeting program existing with at least several times by exchanging rate bands.

There are some reasons of too much focusing on the exchange rates in developing countries. Firstly, there might be instability in exchange rates due to unexpected shocks and big capital stock entry. Secondly, for the banks that lack monetary stability, exchange rate is naturally a source for inflation expectations. Therefore, monetary depreciation causes a big inflationist effect in developing countries which have had bad experiences on inflation. The effect of exchange rate change to inflation has been faster in some developing countries especially in Latin America compared to others. Thirdly, it can be stated that even though there is little effect of exchange rate change to inflation, there is always a probability of revealing financial difficulties in real sector with the sudden fluctuations of exchange rates. These types of sectoral imbalances have been encountered in the past and arising of bigger difficulties under inflation targeting is probable. Fourthly, balance sheets of the companies, financial institutions and public sector of developing countries are very sensitive to the exchange rate change as they have all borrowed foreign currency. Therefore, a big change in exchange rate causes bankruptcies and this decreases the value of bank existence. This effect may bring forth negative results as the central banks relatively prefer limited reliability in some developing countries.

On the other hand, adapting to exchange rate band might engender the economists to calculate the exchange rate risk on lower degree and encouraging the flow of capital surplus. In countries where bank management is weak, this capital flow might accelerate domestic award loan and it can cause increasing passivity of financial crisis and accumulating unpaid debts.

[26] Amato, J. D. And Gerlach, S., a.g.e., p. 786.
[27] Oktar, S., a.g.e., p. 22-23.

Chile, Colombia, Israel and Poland central banks adapt inflation targeting policy while using exchange rate band. That being a step in anti-inflationist policy application, stabilizing the exchange rate causes a real value increase in the course of time. As a result of this, the way of overcoming the excessive capital flow that has been aroused with the application of stable exchange rate in order to continue the anti-inflationist policies provides flexibility. The gap of exchange rate band is widened for this reason. However using the flexible exchange rate becomes a necessity in order to continue the anti-inflationist policy in one hand and to prevent competition loss as a result of stable exchange rate policy application on the other hand. At last, exchange rate targets have been given up because of the incongruity with inflation targets. Leiderman and Bufman propose that such incongruities occur as long as they are used as rate band in part of the inflation targeting strategy by Israel Bank[28].

1.2.2. Designation of the Inflation Target

Adaptation of inflation targeting entails choosing a proper price index and determining a correct target level.

While describing inflation target a suitable measurement method should be chosen. The most common measurement method for target inflation is general or core inflation which is based on the consumer price index (CPI) [29].

Just like developed countries, developing countries also considers the consumer price index because CPI is well-understood by public, easily acquired and checked. However basket of consumer price index in developing countries differs from the developed countries in two points. First one is that food forms bigger section in developing countries than developed countries. CPI might be ineffective for inflation calculation in developing countries as food prices are sensitive to weather conditions and their prices are changeable. Second one is that as the intervention of government to the prices is quite common, price movements do not reflect reality. As a matter of fact, these price interventions that have direct effect on price levels cause insufficient inflation control and give harm to the dependability of the central bank.

Another variable used to measure target inflation is core inflation. Central banks are leaded to target core inflation because of big load of food in CPI causing difficulty on controlling the inflation. A criteria of core inflation in which the importance of food price and invasive price having been decreased can not reflect the real living cost completely. Using the core inflation might also cause reliability problem. Brazil in where the impression of control of price index had been given in order to decrease the recorded inflation in past, central bank decided that all the core inflation criteria would decrease the reliability and for this reason chose the target of CPI. Besides, Poland Central Bank has also decided not to target the core inflation as it has no independent and obtainable criteria and that it would increase the security related worries. Needless to say, even though the core inflation is not being used as target, central bank might profit from it when evaluating the economical conditions and running policies.

[28] Leiderman, L. And Bufman, G., *Inflation Targeting Under a Crawling Band Exchange Regime: Lessons from Israel. In: Blejer, M., Ize, A., Leone, A., Werlang, S. (Eds), Inflation Targeting in Practice: Strategic and Operational Issues and Applications to Emerging Market Economies*, **IMF**, Washington, 2000.
[29] Alparslan, M., Erdonmez, P. A., a.g.e., p.6.

It is claimed that developing countries should target a higher inflation rate compared to developed countries for specifying the proper target level. But even though there are proofs on reasonable inflation rates might cause negative results for growing, there is no reason to believe in the support to the growth with high inflation targets.

It can be easily stated that considering the developing countries average growth rate being faster than the developed countries, interiorizing same level of inflation target probably brings about exchange rate increasing by increasing (even fallings) the prices of goods subject to trade. As an alternative, central bank might prefer a higher inflation target in order to keep price increase at international level rate for the goods subject to trade and rather stabile nominal exchange rate. Estimations show that the effect of Harrod-Balassa-Samuelson[30] requires a higher inflation target than 1-2% in developing countries[31].

Another problem that has effect on desired level of inflation target is the zero lower bound (ZLB) above the nominal interest rates. While describing the importance of ZLB there are two important factors. It is observed that developing countries are exposed to bigger economical complications than developed countries since in these countries possibility of facing with more unstable economical conditions for the central banks is higher. For this reason, in any inflation rate they are much more eager to decrease the nominal interest rates below zero. Secondly, the balance is the real interest rate. Theory of standard growth brings forward the issue that real interest rate is higher in developing countries. In a specified inflation rate, higher real interest rates bring higher nominal interest rates. Therefore, central bank tries to lower down the nominal interest rate before reaching to ZLB. According to this, it can be said that the importance of ZLB is not bigger in developing countries in comparison with developed countries. [32].

To sum up, there is very little evidence to claim that developing countries' inflation target level has to be way different than the developing countries.

[30] If a country's productivity on the goods subject to trade is higher than the goods that are not, the level of prices will be higher when compared to other countries. Consequently, international productivity differences affect the international comparative price levels. This situation was used by Balassa (1964), Samuelson (1964) and by Harrod (1933) in order to explain the deviation of Purchasing Power Parity in international level. This situation is named as the Effect of Harrod-Balassa-Samuelson. For further information: Obstfeld, M. and Rogoff, K., **Foundations of International Macroeconomics**, Cambridge: The Mit Press, Massachusetts London, England, 1996, p. 210.
[31] Amato, J. D. And Gerlach, S., a.g.e., p. 788.
[32] A.g.e. p. 789.

1.3. Advantages and Disadvantages of Inflation Targeting

1.3.1. The Advantages

Main advantages of a mid period monetary policy of inflation targeting are as below:

- Increases the transparency on the application of monetary policy.
- A more understandable policy compared to alternative politics, monetary and exchange rate targeting policies.
- Increases the dependability and liability of central banks to reach their inflation targets.
- Provides the usage of all necessary information by monetary authorities for reaching the target of price stability.
- Provides the monetary policy emphasize the national economical shocks.
- Provides independency of the central banks to use and control the tools of monetary policies.
- Helps the application to the monetary policy operationally.
- Provides main focus on topics that the central bank would materialize the monetary policy in political arguments.

In regimes where the inflation is directly targeted, being transparent and regular informing of public is essential. In fact such features are crucial for the success of this regime. Within this concept, the central banks that targets inflation directly publish "Inflation Report" in order state past and future performance of inflation and monetary policy clearly.

1.3.2. Disadvantages

Inflation targeting regime has some disadvantages besides its advantages.

- As it has to be applied firmly and relentlessly both central banks and governments have deviation in practice from time to time.
- When compared with other monetary policy regime it creates an inactive production balance. This situation especially comes up with important demand shocks (like the price change of oil).
- It can restrict the economical growth in short term.
- It can not prevent out-toping of the financial policies over monetary policies.
- Flexible exchange rate regime that is necessary for applying the policy can cause financial unsteadiness[33].

Result

Many developing countries have been implementing inflation targeting regime since 1990 and a lot of things are learned from these countries experiences. Two basic results have been introduced in evaluations done in the nominal field opposed to these experiences. First one is, inflation targeting is being implemented successfully even in the countries that have not met the prerequisites which have an important role in inflation targeting. Second one is that exchange rate targeting plays a relatively bigger role in developing countries because of the huge proportion of the financial structure of them. In the term of inflation, inflation targeting is being used with exchange rate targeting together.

[33] Alparslan, M., Erdönmez, P. A., a.g.e., p. 8-9.

However, when going in the process of inflation, central bank policies might designate the inflation targeting as a general aim. In the period of transition to low inflation level in developing countries official exchange rate bands is constricted and this implementation is postponed afterwards. Even though disagreements on this topic have been still going presently, it is observed that exchange rate targeting being used as a mid target causes many positive results.

As a result, that the inflation targeting is an implementation of a combined series of monetary policy requires demand, determination and firm follow-up and is a policy that can show desirable outcome appears to be an important result gained from the applications in recent years.

Bibliography

Alparslan, M., Erdönmez, P. A., *Enflasyon Hedeflemesi*, Bankacılar Dergisi, Sayı 35, TBB, Ankara, 2000.

Amato, J. D. and Gerlach, S., *Inflation Targeting in Emerging Market and Transition Economies: Lessons After a Decade,* European Economic Review, Vol. 46, Issues 4-5, May 2002.

Karasoy, A., Saygılı, M., Yalçın, C., *Enflasyonun Doğrudan Hedeflenmesi Politikası ve Bazı Ülke Deneyimleri*, T.C. Merkez Bankası Araştırma Genel Müdürlüğü, Tartışma Tebliği, No: 9801, Ankara, 1998.

Leiderman, L. And Bufman, G., *Inflation Targeting Under a Crawling Band Exchange Regime: Lessons from Israel. In: Blejer, M., Ize, A., Leone, A., Werlang, S. (eds), Inflation Targeting in Practice: Strategic and Operational Issues and Applications to Emerging Market Economies,* IMF, Washington, 2000.

Malatyalı, N. K., Enflasyon Hedeflemesi, Ülke Uygulamalarına Örnekler ve Türkiye'de Uygulanabilirliği, DPT Yayınları, Ankara, 1998.

Mishkin, F. S.(a), *Inflation Targeting in Emergign-Market Countries,* American Economic Review, Vol. 90, 2000.

Mishkin, F. S. and Savastano, M.(b), *Monetary Policy Strategies for Latin America,* NBER Working Paper 7617, 2000.

Obstfeld, M. and Rogoff, K., Foundations of International Macroeconomics, Cambridge: The Mit Press, Massachusetts London, England, 1996.

Oktar, S., Enflasyon Hedeflemesi Para Politikasının Güvenilirliği ve Fiyat İstikrarı, Bilim Teknik Yayınları, Ankara, 1998.

Orphanides, A. and Wieland, V., *Inflation Zone Targeting*, European Economic Review, Vol. 44, 2000.

Svensson, L. E. O., *Inflation Targeting as a Monetary Policy Rule*, Journal of Monetary Economics, Vol. 43, 1999.

ENVIRONMENT-TRADE RELATIONSHIP AND CE-THE CASE OF EU AND TURKEY

Ayşegül SAMSUNLU
Beykent University, Ayazağa, İstanbul, TURKEY
samsunlu@beykent.edu.tr

Environment-trade relationship is one of the most important issues of international trade. There have been two important processes during recent years. One is GATT/WTO's role in liberalization of trade. As a result of the efforts of this institution, protective trade barriers like quantity limitations and customs have been lifted. The second process is the result of environmental concern. Thus the standards for protecting environment have been developed in detail.

In international trade, parallel with the above mentioned factors, antitariff barriers originating from environmental protection have started to be utilized. The developed nations aim to have control on trade through antitariff restrictions like environment, health and security.

European Union which has an important share in the world trade has enacted many important directives to apply its policies about trade, environment and other important issues.There are two important goals. The first one is, to have free circulation of goods in domestic markets. The second one is to have the maximum protection of the domestic market after attaining the first goal. In applying these directives, European Union has given special importance to environmental factors. CE (Confirmite Europeenne) is the most important one that is emphasized by European Union. CE is provided for the security of the product. CE is like a passport for free circulation in the market of European Union.

Turkey which has been an associated member of European Union since 1963 has signed Customs Union Agreement with European Union in 1995. Exports is very important for Turkish economy. Consequently ,Turkey has to harmonize with European Union in all aspects including the effects of environment on trade. Turkish firms has to receive CE in their commercial activities. TÜRKAK (Turkish Accreditation Institution) has been established in 1999 in order to provide CE. TURKAK has applied to EA (European Accreditation).However this application has not been concluded.Since 2002, Turkish firms have to receive CEs from other institutions that have the right to accreditate. They also receive accredidation from the representatives of these companies in Turkey. This affects trade negatively and it brings an extra financial burden for Turkish companies.

In this paper, the trade relations on the world and European Union and antitariff trade barriers originating from environmental protection will be studied. The role of environmental factors and CE on antitariff barriers and the impact of these factors on the business between Turkey and EU will be evaluated by studying some of the problems in Turkish foreign trade.

Key words: *Environmental factors, CE, GATT, WTO ,EU, trade,*

INTRODUCTION

The relationship between environment and trade has been one of the most important issues of international trade. There are two processes that are related to this issue. The first one is the process of the liberalization of trade led by GATT/WTO. The other process is developing and detailing the standards related to the environmental protection. The technical restrictions that act as trade barriers with respect to GATT/WTO are permitted if they have the justification of environmental protection. Antitariff technical barriers that have environmental origin have functioned as a hidden protectionism among countries from time to time. As a result of global communication, the conscious of society has increased in terms of quality and environment. The details about environmental protection and human health, have been used to restrict the overseas trade. (TÜSİAD,1998,s.26)

The environment today is threatened at every level. Environmental protection influences everyday activities to a larger extent. Concurrent with this level of public awareness, there has been a gradual evolution in environmental protection strategy. In the mean time, regulators have sought to identify and arrest the environmental problems before it occurs.This approach would require manufacturers to re-examine the whole lifecycle of their products with an eye to minimizing environmental degradation at every stage, from production to disposal (OECD,1991,s.11).

GATT, General Agreements on Tariffs and Trade, has aimed to liberalize trade. However in practice the protectionism has increased. With EMAS (Eco-Management Audit Scheme) ISO 9000, ISO 14000 and ISO 18000 which are the important environmental factors have been developed. ISO 9000 has been prepared to attain the desired level of quality of the products that are manufactured. ISO 14000 has been developed to do the necessary arrangements taking into consideration the environmental aspect of the firm. Job Health and Security Management System has been developed by ISO 18000. CE is more effective than these environmental factors. Eco-label has the objective of promoting environmental impact compared with other products in the same product group. CE applications that has been utilized since 1985 have aimed to take the responsibility of the product that the manufacturer produces in terms of life, commodity, health and environmental security.

The Decision of Partnership Council, has been signed between Turkey and EU in 1995. As a result of this decision, security, health and the protection of consumers have become mandatory. In January, 2002, a new law was enacted. CE has become a compulsory item for the products that are included in the 23 directives applied in both in the domestic and foreign markets. (Bursa Ekonomi,2006)

EU AND THE DEVELOPMENT OF CE

European countries have signed Rome agreement in 1946. Since then, the countries have tried to form a domestic market. Free movement of goods has been prohibited for many years because of the fact that the countries wanted to determine their own national security, health conditions and the environment.

There have been trade barriers among countries that are members of EU because of differences in technical product development and test procedures. This was not in line with the idea of one market. The term Old Approach was used. As a result of all of these developments, European Commission has tried to dismantle trade barriers. European Justice Court has been effective on this decision.

As a result of this adaptation, technical legislation was used in member countries. Common Technical Legislation with European standards has been prepared to be used by these countries.

Even though this policy has been very helpful, desired results could not be attained until 1980s. The reasons for this were the fact that the legislatation was long and it included difficult procedures. On the other hand, the directives were very much detailed and there were many technical details.

New Apprach Policy has been formed in order to remove the drawbacks of the Old Approach. The basic idea of the New Approach consists of the fundamental requirements that can be defined as the protection of health and ensuring the security of people. The New Approach includes the required principles related to these areas. However this requirement, consists of the principles that are applied in the case of trade barriers. The New Approach includes the binding measures that are related to the standardization topic. This issue is one of the weakest issues related to the Old Approach. The standardization issue is optional and the New Approach includes the arrangements that are related to confirmity evaluation. The basic requirements namely the security of human beings, security of their commodities and the protection of animals and plants has also been included in legislation.(Çeşmecioğlu,2004,s.6-7)

According to this New Approach, only the security conditions that the product has to have will be harmonized. The technical aspects of products will be determined by the standards that will be prepared by European Standardization Institutions (CEN, CENELEC and ETSI). (Ergin, 2005)

The New Approach has the provisions for CE mark.This mark shows that the products are appropriate for these directives and they have passed all the required evaluations. The products are in line with health,security and consumer and environmental protection. The objective of the directives is simply the movement of goods into and within EU.

New Approach Directives are based on three fundamental pillars:

1- Council Resoulution of 7.5.1985 where a ”New Approach to technical harmonization and standards” is seen as essential condition for improving the competitiviness of European industry.
2- Council Resolition of 21.12.1989 – on a Global Approach to certification and testing,which states the guiding.
3- The Global Approach was completed by Council decision 93/465/EEC. This Decision lay down general guidelines and detailed procedures for comformity assessment that are to be used in New Approach directives(European Commission,2006).

23 New Approach Directives have been accepted and it is believed that this figure will increase in the coming years. The directives that EU requires that should carry CE mark consist of 23 production areas. Some of these products are toys, electronical home appliances, medical devices and elevators. These are products that are used in one’s daily life**.**

CE MARKING AND ITS EFFECT ON ECONOMY

CE letters mean ‘’Conformite Europeenne’’ in French and this shows conformity,labelling and evaluation system in Europe

CE marking is a European proof of comformity and is also known as’’trade passport to Europe’’that allows manufacturers and exporters to circulate products freely within EU(Niemans,2006). They are not inspected for the second time in customs. European Union has started to use CE in 1985. CE covers 25 members of EU and 4 candidates. The candidates are Bulgaria, Romania, Turkey and Croatia. In 1994, EU and the EFTA countries with the exception of Switzerland and later Liechteinstein signed an agreement for the creation of a European Economical Area (EEA) CE marking on a product ensures the free movement within the EEA. CE mark is mandatory both for the production in EEA countries and also for the exports of European Union.

CE confirmity mark is not the only label that is provided in EU legislation but it is applicable to many products.

CE mark is not a label for quality. CE mark is not intended as a guarantee for the consumer. It is a label that is appropriate for new approach directives.Health, security and the customer are emphasized.

Since the introduction of European product legislation and CE marking, product liability has become a very important factor for the manufacturer, exporter or importer in conducting trade in Europe

The central element of European product legislation is user safety. If damage or injury is sustained from a particular product, the user may hold the manufacturer, authorized representative, agent or importer responsible. European legislation in the area of product liability allows users of products to claim damages as the result of an injury.

The process of receiving CE mark increases the cost of production only for once relatively. On the other hand, the necessity to be tested again if the company enters a new market is lifted. In this way, the cost of production of the good increses for once but the cost of circulation of the product in international markets decreases. There will be only one set of laws and regulations to comply with in designing and manufacturing a company's product for the entire European Union (EU) marketplace. The multiple and conflicting national restrictions on regulated products will be eliminated. This document needs to be kept for ten years. The document is valid for eight years. The most obvious benefit is that the CE marking on a company's product will gain the company access to the European Economic Area.(EEA)

If the European product directives apply to the products of a company and the company wants to continue to export to the European market (or introduce new products), then CE Marking is mandatory and therefore crucial to a company's success.

Additional benefits may include that the product of a company is made safer for end-users and consumers as well as reduced damage claims and liability premiums(Qnet,2006).

Only EU authorizes the institutions that have the right to control and give the notification document. There are many authorized institutions in 24 EU member countries and Norway which is a member of EFTA. Hundreds of notified bodies are located in Europe. Notified bodies are authorized by European countries to serve as independent tests labs and perform the steps called out by products directives.Notified bodies may be a private sector organization or a government agency. There are not any authorized institutions in the countries that are not members of EU. Therefore, the authorized institutions establish branch offices in these countries. One of the most important aspects of the CE marking regulation is that producers and exporters from Non-European countries need an European Authorized representative for their product to be sold in the EU. The authorized representative of a non-European product is responsible for the CE marking and safety of the product.

CE, APPLICATION OF CE IN TURKEY AND THE PROBLEMS

The Customs Union agreement between EU and Turkey has taken effect on January 1, 1996. As a result of the eighth and eleventh articles, the condition that the technical legislation of EU should be harmonized until 2001 has been put into effect. The topics that are related to the technical legislation of EU consist of issues such as standardization, measurement, calibration, quality, accreditation, test and documentation. It is mandatory that these issues are adapted. However the harmonization process has not been finished in Turkey. Therefore the adaptation period has been postponed to the beginning of 2003.

On the other hand, the political basis of the adaptation is done by enacting the "The Preparation and the Application of the Technical Legislation Related to Products" that has taken effect in January, 2002. CE became compulsory in the domestic market.

In order for the confirmity documents that are provided by the confirmity evaluation institutions to be accepted internationally , Turkish authorities have tried to make sure that these are in line with the criteria set forth in the legislation and the accreditation system. Consequently, Turkish Accreditation Institution (TÜRKAK) has been founded in 1999.

Turkey has shown efforts to harmonize with the Technical Legislation of European Union (EU) and TÜRKAK has worked for the accredidation process. (ISO , 2004)

Approximately %65 of Turkish exports (with a value of approximately 60 billion USD) in 2006 is made to the members of EU and EFTA. The imports is approximately 90 billion USD.

In Turkey, approximately %70 of imported manufactured products are related to CE. Such a high percentage has not been attained for the exported goods. (Buyusa, 2006)

Generally, it is not possible to mention that issues like health, security, environment and consumer protection have been regarded as important topics in Turkey until now. Since they are very important, producers in Turkey will have a chance to increase their standard because of EU. They will also change their view, design,. production and service. As a result of these changes, they will have the opportunity to reach larger markets with competitive advantage.

There are not any authorized institutions with regard to CE issues. Turkish Standards Institute (TSE), Turkish Loyd(Türk Loydu) and Turkish Cement Producers Association (Türkiye Çimento Müstahsilleri Birliği) have been successful to a certain extent. However their authorization is still not valid since the decision of European Commission has not been published in the Official Gazzette of EU. There are more than 100 foreign authorized instutions that have operations in Turkey. Most of the domestic producers have been receiving CE document from the Turkish representatives of these companies since 2002.

Turkish producers have to pay large amount of money to buy these services. The approval of design is done at the general office of these institutions in their own countries. Because of this, the processes are very long and the companies have to send many products overseas and this brings a heavy financial burden for Turkish producers. (Çeşmecioğlu,2004,s.34).

According to Mr.Kenan Malatyalı, who is the President of Turkish Standards Institute in Turkey, Turkish companies have had to pay approximately 5 billion Euros to foreign companies and their representatives in Turkey during recent 3 years. The law has been enacted in 2002. The application of CE has started in 2004. In Turkey, approximately 50.000 products have to carry the CE mark on a product basis. When TSE is given the authority, it will be among the top three European authorizing institutions. (Malatyalı,2006).

In Turkey, Small and Medium Sized Companies (SMSCs) account for a great portion of Turkish industry. %97 of the companies are SMSCs. SMSCs provide %52 of labor and %46 of industry revenue. However, they can only export %26 of the total exports. SMSCs function on a small scale and they utilize simpler technology. Most of the companies that can be defined as SMSCs sell their products in the domestic market. They are not interested in the topic and they are not controlled therefore they do not receive CE. Only SMSCs that export their products receive CE mark These companies produce for other companies and they have great difficulties with CE mark.

The production that is done by using old technology has to receive CE mark. The cheap and old technology and machinery and equipment are transferred to the developing nations like Turkey. These countries have difficulty in obtaining CE. The companies that do not have the environment protection infrastructure are not able to receive CE mark. They prefer to use imports to achieve the increase in capacity of their factories that manufacture finished goods. This results in the loss of National Income. (TÜSİAD, 1998)

As the exports increase, CE products are imported from foreign countries. These CE products are used in the manufacturing of products that are exported overseas. This fact has resulted in negative effects on the production of the industry of domestic suppliers. In order to solve the problem of foreign trade deficit and to decrease the import of products that are cheap but has low quality, the government has started to utilize the application of CE mark.

The quantitative efffect of the application of CE on Turkish exports could not be determined. It can be said that this application has affected the exports negatively during the initial years. During the following years, all the large firms except SMSCs have solved their problem by receiving CE mark. Even though the government has provided financial support in the process of receiving the CE mark, SMSCs have not been very successful. This fact has resulted in the limitation of the exports of SMSCs.

CONCLUSION

European Union has aimed to become a single market. It has been very successful in reaching this aim by enacting numerous directives. Among these directives, are the directives about CE and other environmental factors. These factors have had important effect in the Union's aim of becoming a single market by providing the provisions for the health, security, environment and the protection of consumers. CE and the other environmental factors have established standards and increased the quality of products the countries that are members of EU and EFTA. On the other hand, the directives that have been related to this issue, function as trade barriers for the developing countries in spite of the encouragement of GAT/WTO. Turkey has been an associated memeber of EU since 1963. After Turkey has signed the Customs Union Agreement, it has accepted to the application of CE mark in Turkey. The necessary laws and regulations have been enacted. None of the institutions in Turkey has received the authorization right for CE mark. As a result of this, there are problems about this issue. Some of these problems are related to the following: When a company wants to receive the CE mark from a foreign firm or its representative company it has to spend a large amount of foreign exchange. The company has to spend a lot of time and it's costly.

Since 2002, most of the large companies in Turkey have taken important measures in receiving CE. However, the Small and Medium Sized Companies (SMSCs) which form the large portion of the industry have not been successful. The companies that sell their products to foreign markets do not buy the materials from SMSCs. Instead these companies prefer to import goods that are manufactured overseas. These products have CE mark. This has resulted in the loss of foreign exchange and an increase in unemployment in Turkey. Even though concrete values about the economic loss as a result of CE cannot be obtained by the research that has been conducted, it can be said that the application of CE has affected Tukish Foreign Trade especially during the initial period. Its effect has been to a certain extent during the following years.

REFERENCES

"The Adaptation Efforts of Turkey to European Technical Legislation", 2004, The Publication of İstanbul Chamber of Industry(in Turkish).

Bursa Ekonomi,(2006),Bursa Chamber of Commerce and Industry 218, April, (in Turkish)

Çeşmecioğlu,S.,(2004),CE Guide, The Publication of İstanbul Chamber of Commerce,İstanbul. (in Turkish)

"Environmental Non-Tariff Technical Barries To Trade and An Action Plan For Turkish Industry(Executive Summary)", 1999, TÜSİAD publication No-T/99-3-33),İstanbul

"Environmental Labelling in OECD Countries", OECD publication", 1991,Paris

Ergin H., (2005) Turkish Standards Institute and CE mark, The Standard Periodical , TSI Publication ,October. (in Turkish)

"Exporting to Eorope and CE Marking",Qnet LLC, www.ce-mark.com/cedoc.html, , accessed to the website:06.10.2006.

Malatyalı,K.,(2006), "EU will Authorize TSE", Dünya Newspaper, July 7 ,İstanbul. (in Turkish)

Malatyalı K. (2006) The Personal Interview, October.

"NewApproach,www.ec.europa.eu/enterprise/newapproach", last updated 15.09.2006, accessed to the website:06.10.2006.

Niemans,K.,(2006), Exporting to EU: Introduction to CE Marking, Australien Export Online,www.export61.com , accessed to the website:06.10.2006, Australia.

"Technical Antitariff Trade Barriers with the Origin of Environmental Protection in Foreign Trade and an Action Plan for Turkish Industry" 1998, The Publication of TÜSİAD, No:98-233,İstanbul (in Turkish).

http://ec.europa.eu/enterprise/newapproach/index
www.turkak.gov.tr
www.tse.org.tr
www.dtm.gov.tr
www.iso.org.tr

THE ROLE, RESPONSIBILTY AND IMPACT OF BUSINESS IN ECO-EFFICIENT TECHNOLOGIES AND BIO-TRADE

R. Esra DEMIRDOGEN
Ege University, Faculty of Science, Department of Chemistry, TURKEY
rukenesrademirdogen@yahoo.com

Businesses have major role to play in helping protect and enhance the environment in wider goals of sustainable development. Thus, business should develop sound environmental management policies for processes and products. For business enterprises to attain a better standing in the society, eco-innovation and green economy should be the motto. Efficient business and environment programs and strategies, which would encourage wider take up of corporate responsibility practices, including environmental reporting and management systems, enabling investors to deliver more sustainable consumption and production, providing information and advice to business on environmental issues and working directly with business sectors to improve environmental performance, should be developed. Hence, major emphasis has been placed on business enterprises, government and public and on the tools that reduce costs by conserving resources. In this way, while firms can become more cost-competitive through gaining eco-marketing opportunities, people would be more aware of the consequences of the products that they consume and of their demands whereas the governments would be able to make efficient legislations for creating environmentally responsible economies, supporting green technologies and thus for protecting the business, the public and the ecology. In this study, the interrelation among the environmental management schemes, public and governmental attitudes and the cost effectiveness and ability of competition of business enterprises favoring green economies are investigated and strategies for efficient bio-trade, which comprises of trade, biodiversity conservation and sustainable development, are presented.

INTRODUCTION

The economic revolution, which is sweeping throughout the world, has created a large new market for goods and services. It presents huge opportunities for entrepreneurs, government leaders and private citizens. There are five primary driving forces behind these economic changes: entry into global economy; emergence of an affluent, consumer-oriented middle class; information revolution; urbanization and industrialization. People have become increasingly more aware of themselves and their environs. This has altered their consumption styles and demands. Hence, the economic growth will put greatly increased pressure on natural systems and the assimilative capacity of the planet. If the yesterday's technology and antiquated thinking to drive this economic revolution is used, environmental degradation would increase so dramatically that public health and ecosystems would be placed at severe risk. However, good governance, strong management, true entrepreneurial spirit and an increasing aware and environment-conscious public can combine to retain the benefits of rapid economic growth while protecting the environment and human welfare. The world is moving rapidly toward a knowledge-based society and economy. Therefore, the relatively narrow "cleaner production" approach is replaced by a more capable one which would combine effective and efficient legislation, clean or green technologies and production processes, invention of new manufacturing methods and products and management of the entire supply-demand chain.

Coalescence of government, business, civil society and others- all focused on creating a sustainable future- should necessarily be established. Only human ingenuity can lead the world to sustainable future. Eco-innovation and creativity will form the

basis of tomorrow's successful corporations embracing new green approaches. These progressive corporations will make profits while protecting the ecology. Therefore, businesses together with the other organs of the society (i.e., government, citizens and other bodies) are increasingly being asked to share in the responsibility of solving the world's environmental and social problems. In this respect, with the understanding that there is no other planet for us to live, the role and the responsibility which falls to these organs are discussed in detail while an efficient collaborative strategy for all the actors is proposed below.

The Role and Responsibility of the Business

Actually, businesses have a major role to play in helping protect and enhance the environment, in line with wider goals of sustainable development. In particular, business has a pivotal role in meting the Johannesburg goals (World Summit on Sustainable Development 2002) on sustainable consumption and production, and corporate responsibility. *Corporate social responsibility* emphasizes a concern about the social dimensions of business activity that have direct concern with the quality of life in the society. ISO describes it as a balanced approach for organizations to address economic, social and environmental issues in a way that aims to benefit people, community and society (ISO, 2002). In this sense, responsible businesses and enterprises should play an important and positive role in society by creating additional economic, social and ecological value for future generations. Since enterprises are vital organs of society, their actions have decisive impact on the societal scene. Thus, managements should realize that the enterprise should consider the impact of every business policy and business action upon society. Hence, the target should be much more than just simply avoiding damage to ecology, economy and society. Sustainable entrepreneurs of today should become more proactive, creative and innovative and be capable of creating ecological and social values proactively. Proactive corporations that adopt emerging sustainability tools will be in a good position to turn what have been considered environmental problems and constraints into profitable outcomes. Firms in all sectors can add to profitability and improve their environmental performance by focusing on (i) eco-efficiency; (ii) recycling; (iii) cleaner production; (iv) continuous improvement processes; (v) energy efficiency; (vi) investing in new eco-friendly or as named green technology. Market share also can be gained by enhancing brand name recognition through eco-labeling and certification.

Corporations should be greener. This can be made via innovations that reduce the environmental impact made by a company on the environment. The question here is: "does it worth to be green?" Although the answer is "yes", the business' response is skeptical, perhaps because managers understand clearly that green business decisions only sometimes result in increased profits (M., Orlitzky, et al., 2004). Naturally, business managers have a direct economic incentive to make environmental investments where they deliver positive returns or reduce significant risks. However, there in many cases addressing environmental problems have resulted in profitable outcomes. For instance, corporations can differentiate themselves by creating products or processes that offer environmental benefits (Denton D. Keith, 1994). Corporations can obtain cost savings through more efficient use of inventory and through waste minimization, recycling, and reuse. Moreover, corporations can derive environmental and business benefits via pushing for private standards or for new government regulations that favor particular corporate operations.

Costs can also be reduced by risk reduction via integrating environment into business thinking. Environmental law suits and accidents are extremely expensive.

Today, due to the severe consequences of systemic effects such as loss of bio-diversity, global warming, and their direct and indirect consequences (i.e., thinning of the ozone layer, melting of the poles, rising in sea levels, increased number and intensity of floods, hurricanes and diseases) both on the society and on the economy, environment has become integrated into the general business practices of purchasing, sale logistics and transport so that they cannot be stopped by adverse business conditions. Regulations and incentives that cater to short term economic interests cannot stimulate the required innovative behavior. Instead, the transition to proactive value creation must come to a large degree from a company itself. However, it is a fact that much of the motivation for acting responsibly will be short-term, defensive reasons such as image and regulation protection. But, longer-term, more offensive and strategic motivators play a more important role. Since globalization has resulted in the proliferation of new laws and regulations that direct business activities to address diverse social problems, large multi-nationals are generally looking to guarantee the long-term continuity of the company and therefore recognize that they have responsibility to make a broader societal contribution.

As is summarized by a progressive Norwegian company, t*he evolution of sustainable development thinking* within the business codes and practices is (Holliday, C., et al., 2002):
1.*the repair phase and cleaning up* the consequences of its past performance
2.*the preventive phase*- developing and installing cleaner technology
3.*the business development phase*- minimizing the environmental impact of products throughout their entire life cycle
4.*addressing globalization issues* that affected their business
Companies should address their broader environmental impacts beyond traditional internal management, covering matters such as upstream and downstream effects, staff training and overall company policy, which are not highlighted in the ISO 14001 requirements. It is also important to be clear about the objectives. In addition to environmental improvement, these include financial benefit, improvement in market share, better communication with stakeholders and an enhanced company reputation.
Business should better integrate sustainable development concerns, which require leadership and personal change, into its activities. Actually, many businesses started on the journey towards sustainability by addressing pollution issues, energy efficiency, cleaner technologies and waste minimization. In 2001, the World Business Council for Sustainable Development issued a report entitled “Sustainability Through the Market- Seven Keys to Success”, for to provide a business perspective on the issue. The 7 recommendations were:
1. eco-innovation
2. eco-efficiency (cleaner production)
3. move from stakeholder dialogues to partnerships for progress
4. provide and inform consumer choice
5. improve market framework conditions
6. establish the worth of Earth
7. make the market work for everyone.

In the globalization world companies face tremendous pressures to comply with rapidly developing formal and informal environmental performance standards. Fortunately, various diagnostic and reporting approaches have been experimented with that allow firms to make unilateral performance improvements including practical tools:

(i) *environmental management system,* which is aimed at improving the environmental performance of an organization. Through EMS managers can monitor and measure performance. There is considerable pressure on corporations that export and/or work with MNCs to adopt acceptable EMS. ISO 14001 is rapidly becoming the de facto standard demanded by the market, and this is further encouraged by the link between ISO and WTO. These pressures will continue to build and in the near future, corporations that do not possess acceptable EMS in place will not be able to do business outside of their national boundaries.

(ii) *corprorate environmental auditing and reporting*. The auditing systems warn the top mangers of potential risks and failures of line managers to meet performance targets. However, reporting the results of the audits both to the managers and to externalities is of utmost importance. While the first reporting enables taking right steps just in time the other kind allows enemies and/or rivals to hear about the accomplishments achieved by a particular company/establishment.

(iii)*Benchmarking.* It is a performance measurement tool that can be used in conjunction with improvement initiatives to measure comparative performance and to identify best practices. It is most closely associated with corporate performance assessment. The term "environmental benchmarking" refers simply to listing and comparing (or ranking) the environmental performance of different organizations. However, it can also serve as an improvement tool that involves analyzing the practices that lead to superior environmental performance. It can provide a substantial contribution to the improvement of environmental performance by facilitating the identification of the gap between company performance and a given performance (European Environmental Benchmarking Network, 2000). Benchmarking is determines the performance success of a given activity either inside the body of the enterprise or a unit not indirectly related to it via the most appropriate strategic choice.

(iv)*Life cycle analysis/assessment (LCA),* which is also referred to as "cradle to grave assessment", is used for to identify the environmental impacts of a product, process, or activity throughout its entire "life" – from the extraction of raw materials to processing, transport, use and disposal. This tool, which is widely employed in product improvement, process engineering, strategic planning, and marketing to reduce wastes and improve efficiency, allows: -holistic approaches to determining impacts rather than focusing more narrowly on single issues such as energy inputs or recycling; - scientific methods to collect and analyze data; - targets for improvement; - a rational way to evaluate alternatives. The data collected during LCA can be used as performance indicators for different stages of production processes. Combined with life cycle assessment methods eco-efficiency becomes a powerful conceptual tool. The rapid development of LCA brought along the need for a consistent methodological approach which finally taken up by ISO as the ISO 14040 series (ISO 14040, 14041, 14042 and 14043).

(v) *Environmental management accounting (EMA).* The techniques outlined from *(i)* to *(iv)* are focused on improving managerial control of environmental impacts. In varying degrees the techniques require that environmental costs be accounted for which a new discipline known as EMA is developed. This new field, which has began as a suset of social responsibility accounting, provides reports for both internal use (generating environmental information to help make management decisions on pricing, controlling overhead, and capital budgeting) and external use (disclosing environmental information to the public and to the financial community (Yakhou, M.; et al., 2004).

(vi)EMA involves the identification, collection, estimation, analysis, and internal reporting and the use of material and energy flow information, environmental cost information and other cost information for both conventional and environmental decision making within an organization (http//www.emawebsite.org).

The focus is on costs related to wasted raw materials and other environmental issues (http//www.un.org/esa/sustdev/sdissues/technology/estemal.html).

(vii) Today, EMA is viewed more as measuring environmental performance exceeding regulatory standards (Mathews, M.R., 1997). EMA has developed rapidly because of :

- The competitive global market brought along the necessity of obtaining operational and material gains,
- The increases in costs of raw materials, waste management, regulatory compliance, potential liability,
- The increasing pressure on business to improve overall environmental performance,
- The inherent limitations of some conventional accounting approaches for the management of environment-related costs.

It is easier and much cheaper to be green from cradle to grave than to bother with the problems related with environment due to the cost, which the waste and wasted materials may bring about: (i) energy and purchase costs of waste materials; (ii) costs of additional storage space for waste; (iii) processing costs of wasted materials; (iv) labor costs of waste and wasted materials. Therefore, new technologies, managements, consumption and production methods, which should necessarily be green in nature, should be developed. In this respect, eco-innovation strategies, which are summarized in Table 1, gained great importance.

Table 1. Eco-Innovation Strategies and their application to waste prevention

Eco-Innovation Strategy	Definition	Waste Prevention Example
Clean Production	The continuous application of an integrated preventive environmental strategy to processes, products and services to increase efficiency and reduce risks to humans and the environment (UNEP, 1994 and ANZECC, 1998)	Cadburry Schweppes increased the recycling rate of its solid waste streams at the Ringwood Confectionary Plant from 5% to 50%. Wasted wrappers are used for production of plastic pallets for internal use. Moreover, product wastage was reduced by optimization of caramel extrusion and chocolate moulding processes (DEH, 2004).
Eco-Efficiency	The delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity through the life cycle, to a level at least in line with the earth's estimated carrying capacity (WBCSD, 2000).	
Design for Environment	Consideration of environmental issues at all stages of product development with the aim of producing products with the lowest possible environmental burden at all stages of the product life cycle (Brezet, H., et al., 1997)	In 1993, Patagonia started the use of Post Consumer Recycled PET from soda bottles for the production of fleece jackets and jumpers (Patagonia, PCR Fleece. 2000)
Industrial Ecology	Study of the flows of materials and energy in industrial and consumer activities, of the effects of these flows on the environment, and of the influences of economic, political, regulatory and social factors on the flow, use and transformation of resources (White, R., 1994).	Companies in the Kwinana Industrial Area operate fifty synergy projects including both by-product exchangers and shared use of utility infra-structure. 15 projects involve the exchange of solid by-products for example catalyst wastes, gypsum and kiln dusts, preventing these from accumulating as wastes (van Beers, D., et al., 2005)
Industrial Symbiosis	Engaging traditionally separate industries in a collective approach to competitive advantage involving physical exchange of materials, energy, water, and/or by-products. The keys to Industrial Symbiosis are collaboration and the synergistic possibilities offered by geographic proximity (Chertow, M., 2000).	

Table 1. Cont.

Biomimicry	Uses nature as a source of inspiration, as Model, Measure and Mentor to inspire the development cleaner products, materials and processes (Benyus, J., 1997).	Designers at Interface have explored natural models for design and color, which have resulted in 'Entropy', a carpet that mimics the random color palette of a grassland and forest floor, resulting in easier matching of replacement tiles, fewer discards and easier installation, all ultimately resulting in waste reduction (http//www.interfaceinc.com/us/feature/entropy).
Green Chemistry	Design, development and implementation of chemical products or processes to reduce or eliminate the use and generation of hazardous and toxic substances (Hjerisen, D.; et al., 2002)	The BHC Company redeveloped the six stage Brown synthesis for Ibuprofen to the three stage BHC Synthesis, thereby reducing the theoretical minimum waste generation by over 80% (Cann, M., 2000)

The Role and Responsibility of the Government

Businesses can be attracted to improve their environmental performance by the "pull" of the market or by the "push" of drivers that are either external to firms or a function of internal production economics and company characteristics. Although business can not be forced to be responsible through laws alone, national standards and policies remain the most important influences on corporate compliance because it is at this level that laws and behavior can be enforced. Thus, governments have an important role to play. Governments need to:

a. Speak the language of business. Government has a key role to play and will work closely with business to encourage sustainable patterns of production and consumption:

- encouraging wider take up of corporate responsibility practices, including environmental reporting and management systems.
- Enabling investors to deliver more sustainable consumption and production.
- Providing information and advice to business on environmental issues.

b. Working directly with business sectors to improve environmental performance. Expedite the transfer of environmentally sound technologies in a cost-effective manner.

c. Remove environmentally perverse subsidies. Environmental costs should be eliminated and internalized. "Green" tax reform and eco-labeling should be made.

d. Introduce policies such as market-based instruments, performance standards and (effective) voluntary agreements which allow firms to create solutions which fit their conditions best.

e. Introduce information-based measures which allow stakeholders express their preferences for environmental quality in an informed manner.

f. Take appropriate measures to encourage greater action by Small Medium Sized Enterprises (SME's).

g. Make tough but smart legislation to encourage and recognize environmental leadership by companies.

h. To create policy leadership by integrating sustainability goals into all new policies.

i. Encourage long-term innovation related to sustainable development by using appropriate policy instruments. Build greater capacity in science and technology for sustainable development.

j. Launch effective sustainable development strategies for to secure the future.
k. Increase the flow of foreign direct investment into sustainable development activities including providing infrastructure.

The strategies developed should highlight the need for business' approach to corporate responsibility to extend throughout their supply chains, tackling issues at extraction of raw materials through engagement with consumers about the products and services they buy and eventually discard. Since it is a fact that environmental management systems can create business as well as environmental benefits, they must be focused on real environmental improvement rather than certification. Actually, sound environmental management of processes and products is regarded as a core business issue that can help promote a company's products and services, and improve its corporate standing.

What Can Be Done in Production?
There are expanding demands for *(i)* new environmental infrastructure such as water supply and wastewater treatment systems; *(ii)* renewable energy; *(iii)* environmentally sound primary production and *(v)* environmental services including design, engineering, laboratory analysis, monitoring, auditing, and reporting. It should always be kept in mind that as John Ruskin has put it, "quality is never an accident, it is always the result of intelligent effort". There are *five conditions for success* – demonstrating its usefulness; intellectual honesty about environmental problems; the commitment of senior management; prioritization of actions; and a focus on genuine environmental improvement rather than certification alone. Hence, business needs to become more eco-efficient by creating more value with less impact on ecology. Eco-efficiency brings together 4 critical elements: - emphasis on services; focus on needs; life-cycle view; eco-capacity imperative. Eco-efficiency, which focuses on fundamental needs, organizes broad, holistic thinking, screens options and leads to innovative designs, will help the enterprising company to focus its strength and competencies on the correct long-term objectives and avoid sinking time and resources in short-lived fixes. However, there is more to sustainable production and eco-efficiency. During production the following criteria should be considered:

- Minimize material and energy intensity of goods and services. Renewable energy may be preferred over other energy types.
- Eliminate toxic dispersion. Adopt closed-loop processes.
- Use resource-efficient transportation.
- Increase service intensity of goods and services.
- Extend product durability.
- Enhance material recyclability.
- Maximize sustainable use of renewable resources.
- Energizing of all people (all stakeholders) around this vision.
- Re-design commerce so that a service is sold that allows the company to retain ownership of its products and maximize resource productivity.

The only way to achieve a reduction of environmental impacts is to decouple resource use and associated environmental impacts from its drivers, i.e. economic growth as demonstrated in Figure 1.

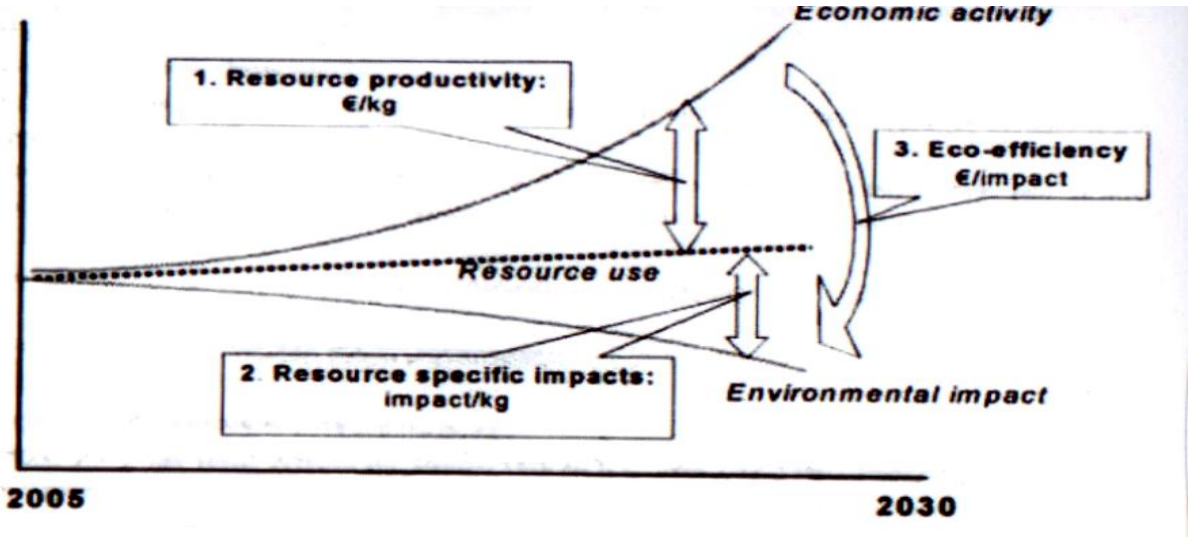


Figure 1. Decoupling resource use and associated environmental impacts from economic growth.

Decoupling of resources use from growing activity, which implies a reduction of resource use per unit of production and decoupling of environmental impacts from resource use per unit of resource use. The latter relates to employment of more eco-efficient practices and/or environmental/green technologies. The three indicators to measure decoupling are:

(1) *resource productivity*, which measures the value added per unit of resource input (€/kg) or to state it in another way
Resource productivity= [(total economic activity of a country)/ (total material use of the country)].
Material intensity of the economy of a country= [(total material use of the country)/ (total economic activity of a country)].
The extent to which dematerialization would be accomplished is demonstrated by the decrease in the material intensity of the economy.

(2) *Resource specific impacts* measure the environmental impacts per unit of resource use. These impacts should include the entire life cycle, i.e., extraction/harvesting upstream of the economic activity, impacts during the use phase, and subsequent disposal to air, water and soil downstream of the economic activity.

(3) Eco-efficiency measures the added value per unit of environmental impact. It can be expressed as
Eco-efficiency = Resource Productivity/ Resource Specific Impact or as (Euro/impact) = (Euro/kg) / (impact/kg)
Through these efficient tools we may measure progress as presented in Figure 2.

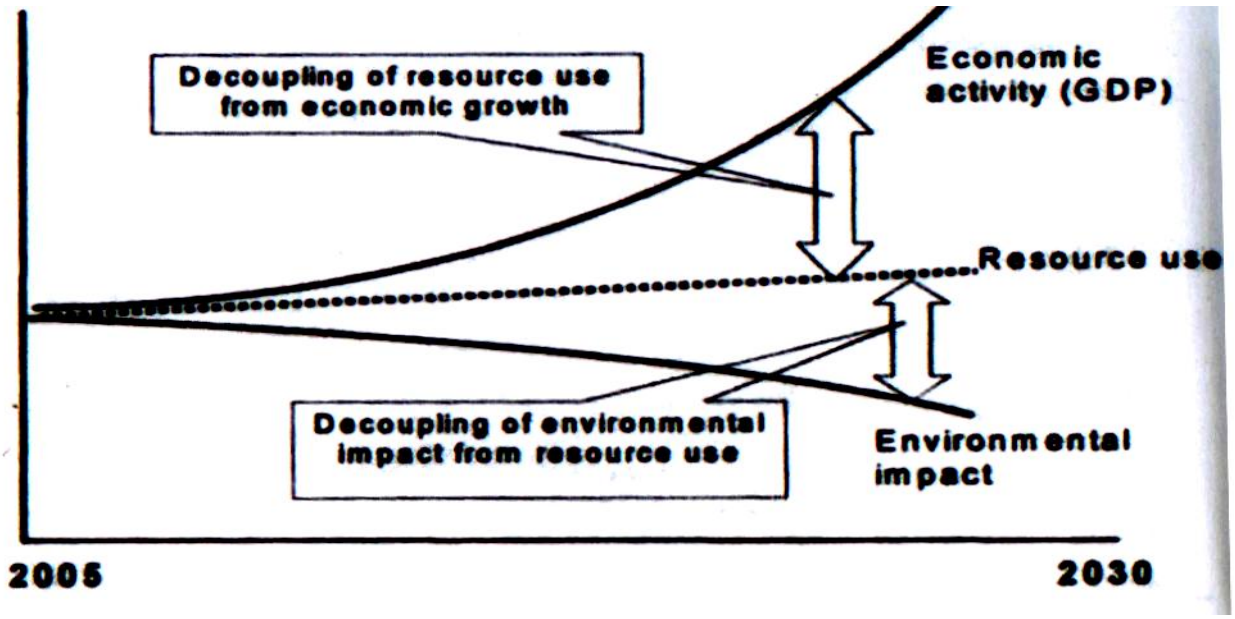


Figure 2. The indicators for measuring progress and their interrelation with economic growth and environmental impact.

Progress via social responsible attitude can be achieved only through full protection of every actor or in other words through complete greening.

Green Technology, Green Economy and Green Mind

Although eco-efficiency is not able to achieve all the goals of sustainable development, it allows business to do what it does best-meet the demands for goods and services while improving the efficiency of operations and demonstrate a social responsible behavior. Thus, eco-efficiency is indispensable in today's knowledge-based economy. The firms can add to profitability and improve their environmental performance by focusing on green production and technology. They should switch their economy and production to those considered to be sustainable through the following means:

(i) *Dematerialization* which involves companies substituting knowledge flows for material flows. Less waste is generated when the manufacturers produce the precise product requested by the client.
(ii) *Closed-loop production.* The objective is to move toward closed-loops and zero discharge, where any output is returned to natural systems as a nutrient or becomes input into another manufacturing process.
(iii) *Service extension* through which consumers are increasingly gaining access to product services by leasing goods rather than buying them outright.
(iv) Functional extension which means designing smarter products that deliver improved service to customers. The products deliver more value with less waste, less energy consumption, and lower total cost.
The overall scheme demonstrating the how un-sustainability or moving away from being green is caused is presented in Figure 3.

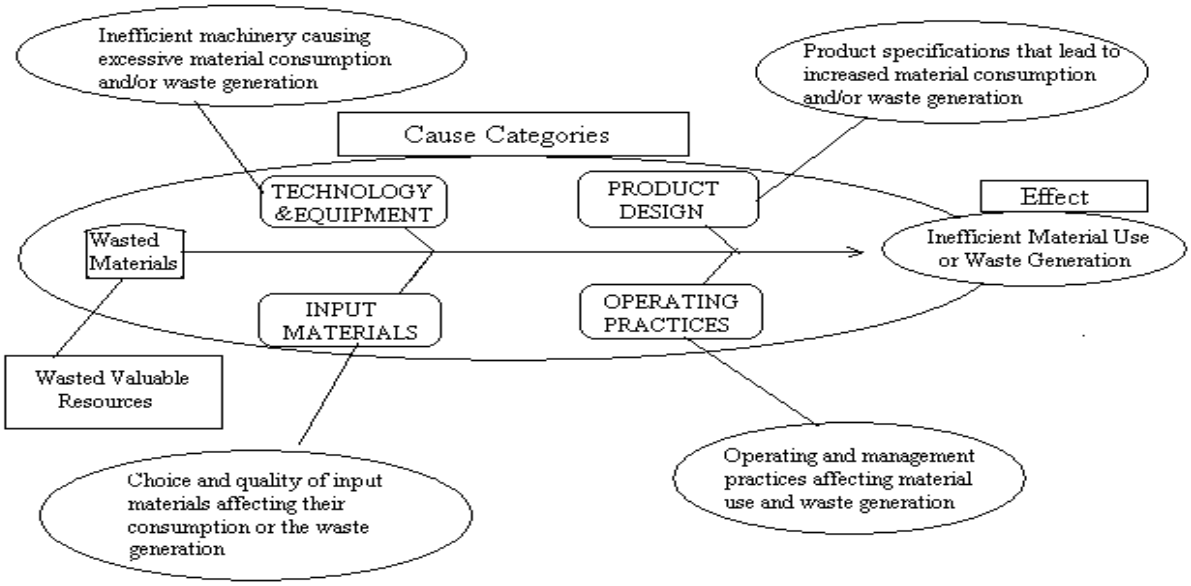


Figure 3. Cause-Effect Diagram for Process Analysis.

On the other hand, going green can be profitable through the expanding market for environmental goods and services, which are produced by certain activities, to measure, prevent, limit, minimize, or correct environmental damage to water, air, soil as well as problems related to waste, noise and ecosystems (ECOTEC, 2002). One estimate of the global market for environmental gods and services based on the OECD definition is €550 billion ($500 billion in 2002 prices) per year worldwide. This includes cleaner technologies, products and services that reduce environmental risks and minimize pollution and resource use (ECOTEC, 2002). According to the estimates of ADB -the American firm, which has made above mentioned analysis- the current global market is about $607 billion and it will grow over $836 billion by the year 2015 as indicated in Table 2.

Table 2. The Global Environmental Market (units in $US billions)

							Forecast	
By Region	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2010**	**2015**
USA	210.5	215.2	221.4	227.5	233.7	240.2	275.1	315.0
Western Europe	157.8	160.8	165.0	169.1	173.4	177.7	201.0	227.5
Japan	93.7	93.3	92.4	92.6	92.9	93.1	94.4	95.6
Australia/ New Zealand	8.4	8.6	8.8	9.1	9.5	9.8	11.7	14.0
Rest of Asia	24.0	25.6	28.16	31.0	34.1	37.5	66.1	116.4
Other Regions	47.6	48.5	45.4	46.6	47.8	49.1	57.0	67.6
Global	542.0	552.0	561.1	575.9	591.3	607.4	705.3	836.1

Source : Environmental Business International Inc. and ADB staff estimates.

Although the market share of the Asian and Pacific region accounts for $37 billion of the global total, its growth rate is the fastest in the world, with the market expected to triple by 2015. The environmental goods and services sector also generates significant new employment opportunities. The educated and increasingly affluent middle classes emerging all over the world increasingly demand that governments, both national and local, provide new and better environmental infrastructure. Once governments and societies make this commitment, there will be hugely increased demand for architectural, engineering and design services; construction contractors; and building material suppliers. Besides this, environmentally responsible or green procurement and environmentally preferable products will be the necessity. *Environmentally responsible or green procurement* means selecting environmentally preferable products (EPPs) which are defined by UNCTAD as, "…products which cause significantly less environmental harm at some stage of their life cycle (production/processing, consumption, waste disposal) than alternative products that serve the same purpose, or products the production and sale of which contribute significantly to the preservation of the environment of products and services that minimize environmental impacts." Businesses often require a green procurement program as part of an EMS, as certified under the European Eco-Management and Audit Scheme (EMAS) or ISO 14001 regimes. However, new government regulations in many countries, including Republic of Korea and Japan, require adoption of green procurement processes.

How Can the Move Toward Sustainability be Facilitated?

A sustainable future requires conscious efforts on the part of government, the private sector and citizens to depart from past patterns. Traditional options command-and-control regulation will not be enough to meet the rapid economic expansion. More rapid progress is needed with the application of market-based incentives to encourage private innovation. A full conversion from the current system may only be possible via the reforms which would be made in public environmental policy. The policy frameworks for introducing voluntary initiatives may best be designed if they are built upon a careful linkage between the most important drivers of voluntary corporate initiatives: (i) cost reduction; (ii) desire to avoid regulatory action; (iii) concern about damage to public image; (iv) expectation of competitive advantage; and (v) pressure from stakeholders. In this new mode of "co-regulation", there is a genuine sharing of responsibility and authority for administering regulation between governments and industry (D., Annaandale; et al. ADB, 2005).

In the era of globalization the corporations will feel the pressure for meeting the necessary standards as it has no means to avoid the environmental laws and regulations emanating from international and national sources. In other words, the corporations will have to obtain a "social license". The incentives required both within corporations and the ones which the governments should introduce and require both economic and policy reform as well as the great investment demands generated by these changes. The governments should set clear but broad targets for environmental outcomes or conditions and then let the businesses find the most appropriate, cost-effective methods by which to comply. However, in order to avoid misinterpretation of this freedom by the private sector and businesses, the governments should: (i) present credible threat of regulation if self-policing fails; (ii) maintain capacity for auditing and monitoring; (iii) establish a system in which offenders can be made personally liable; (iv) cultivate an active civil society that can provide indirect oversight and monitoring support to regulatory authorities. Actually the role of regulations would become less important via the growing effectiveness of the active civil society.

This growth can be fostered by publication of environmental data. Some examples for this is "green rating" schemes, "right-to-know", compulsory annual reporting on corporate environmental performance and the publication of national registries of voluntary initiatives. The supply-chain pressures and the "greening" of this chain; the product and process standards demanding ISO 14001; cooperation between governments and multi-lateral institutions for enabling small firms and SME'S to adopt EMS, which are tailored for the specific needs, and in making new effective legislations would be more enforcing. Moreover, establishment of "industrial zones" or "high-tech zones" –as experimented in PRC and in Thailand- in which the EMS tools are made mandatory would be effective.

CONCLUSIONS

Today the revolutionary information technologies, globalization, and an increasingly knowledge-based society and economy are transforming all institutions from the mechanistic systems of the Industrial Age to organic systems for the Knowledge Age. As true of any transitory phase this transition also awaits big hurdles. The 21st century technologies - genetics, nanotechnology, and robotics – are so powerful that they may create new classes of accidents and abuses since instead of raw materials and large facilities knowledge alone will enable their use. Therefore, these technologies which are developed for greening of industry and life would be effective only if they are used with a "green mind".

Economic systems are evolving under the imperatives of a knowledge-based world which raises questions about the economic model. Thus "social technology" or corporate behavior should be the criteria cared. New market-based and voluntary policy measures can be used to shape corporate behavior while also creating the conditions needed to engage with the private sector and businesses in meeting the rising demands for environmental infrastructure. Governments must do a better job of integrating environmental concerns into both macroeconomic and sector policies and must conduct an active search for new means to finance environmental infrastructure, especially to identify appropriate areas where the private sector can provide services.

The direct links between environmental quality problems and avoidance of the constraints to growth, investment and poverty should be recognized. Although the wise companies in the private sector recognizes that they may protect themselves from the increased cost and risk by taking advantage of opportunities to raise their competitiveness through operational innovations and product differentiation the enormous investment demands may disable the private sector to provide the expertise and capital needed to meet them alone. New financial instruments will be required that tap into private capital and involve closer public-private cooperation in planning and implementing environmental infrastructure and other investments while continuing to rely on market forces. Hence, innovation not only in technology but also in financial instruments will be needed to accomplish the new environmental infrastructure and for to meet the costs. Therefore, more effective and conscious collaboration among government, shareholders, consumers, communities and business should be established and assurance of environmental performance should no longer be thought of as purely the realm of the any sector. Strategic thinking and partnering is needed to ensure best practices and the mission should be to enhance the global competitiveness of business and the quality of life by promoting and facilitating voluntary consensus standards and conformity assessment systems and ensuring their integrity. Hence, business has a big role to play with responsibility for environmental outcomes shared between the public and private spheres.

References

Annaandale, D.; A., Fry; W., Halal; P., King; D., McCauley; R. Salazar. 2005.ADB (Asian Development Bank). Making Profits, Protecting Our Planet. Asian Environment Outlook.

ANZECC, Towards Sustainability Achieving Cleaner Production in Australia. 1998. Australia and New Zealand Environment and Conservation Council: Canberra Act p. 80.

Benyus, J. 1997. Biomimicry: Innovation Inspired by Nature, New York, USA: Harper Collins Publishers.

Brezet, H.; C. van Hemel. 1997. Ecodesign: a promising approach to sustainable production and consumption. Paris, France: United Nations Environment Programme.

Cann, M. 2000. Real World Cases in Green Chemistry. American Chemical Society: Washington DC, USA.

Chertow, M. 2000. Industrial Symbiosis: Literature and Taxanomy. Annual Review of Energy and Environment. 25 : 313-337.

DEH, Eco-Efficiency and Cleaner Production Case Studies. 2004. Department of Environment and Heritage: Canberra (ACT), Australia.

ECOTEC. 2002. Analysis of the EU Eco-industries, their Employment and Export Potential. UK: ECOTEC Research & Consulting Limited.

European Environmental Benchmarking Network. 2000. Background, Fundazione Eni Enrico Mattei. http//ww.eebn.org/

Holliday, C.; Schmidheiny, S.; Watts, P.. 2002. Walking the Talk: The Business Case for Sustainable Development. Sheffield. Greenleaf Publishing.

Hjerisen, D.; M., Kirchhoff; R. Lankey. 2002. Green Chemistry:Environment, Economics and Competitiveness. Corporate Environmental Strategy. 9(3): 259-266.

Interface, Interface's Entropy. 2004. Interface (http//www.interfaceinc.com/us/feature/entropy).

Mathews, M.R. 1997. Twenty Five Years of Social and Environmental Accounting Research. Accounting, Auditing and Accountability Journal. 10 (4): 481-531.

Oriltzky, M.; F,;Schmidt; S., Rynes. 2004. The Social Investment Forum.

Patagonia, PCR Fleece: the facts. 2000. Patagonia (http//www.patagonia.com/pdf/PCR.pdf): Reno (NV), USA.

Yakhou, M.; V., Dorweiler. 2004. Environmental Accounting: An Essential Component of Business Strategy. Business Strategy and the Environment 13:65-77.

UNEPP, Government Strategies and Policies for Cleaner Production. 1994. United Nations Environment Programme: Paris, France. p. 32.

Van Beers, D.; R., van Berkel; A., Bossilkov, Capturing Regional Synergies in the Kwinana Industrial Area: 2005 status report. 2005, Center for Sustainable Resource Processing: Perth.

WBCSD, Eco-Efficiency : creating more value with less impact. 2000. World Business Council for Sustainable Development: Geneva, Switzerland. p. 32.

White, R. 1994. Preface, in the Greening of Industrial Ecosystems, B. Allenby and D. Richards, editors. National Academy Press, Washington DC, USA.

http//www.emawebsite.org.

http//www.un.org/esa/sustdev/sdissues/technology/estemal.html

Prentice Hall.

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

THE RELATIONSHIPS BETWEEN MACROECONOMIC INDICATORS AND BANKING PERFORMANCES OF TURKEY AND THE EU COUNTRIES

Gülhayat GÖLBAŞI ŞIMŞEK, Seher ARIKAN TEZERGIL**

[*] *Gülhayat Gölbaşı Şimşek, Yıldız Technical University, Faculty of Art & Sciences, Department of Statistics, Davutpaşa Campus, Esenler, 34210, Istanbul/TURKEY*

[**] *Seher Arıkan Tezergil, Marmara University, School of Banking & Insurance, Göztepe Campus, 81040, Kadıköy, Istanbul/TURKEY*

sehertezergil@yahoo.com, gulhayat@yildiz.edu.tr

This paper assesses empirically the relationship between banking profitability performance and economic performance for the EU countries and Turkey based on cross-country data of year 2004. With Canonical Correlation Analysis(CCA) the impact of macroeconomic indicators on banking ratios has been investigated. It is found that there is negatively relation between macroeconomic indicators and banking profitability performances. The countries being well with regard to macroeconomic indicators are bad from the point of banking profitability performance. This result agrees with the fact that economic growth affects the profitability in banking sector negatively.

Turkey's relative position in EU was determined. Owe to negative macroeconomic indicators in Turkey, the banking sector profitability in Turkey heavily differ from other EU countries with regard to profitability performance. In comparisons made within the newly integrated 10 countries, Turkish Banking Sector found to be relatively superior from many points of view. On the contrary Turkey's macroeconomic indicators don't differ significantly from the EU countries integrated lately.

Key Words: *Banking performance, Macroeconomic indicators, Canonical Correlation Analysis.*

1. Inroduction

Many strategies on fiscal policy have been developed for Turkish Economy in order to fund of public debt stock during 1990's. The gap which is fairly higher was created between exchange rate increment and general level of interests for being achieved of this goal. The spontaneous consequence of this policy was appeared as "Desinflation Programme" in 2000. Following strategy after the crisis in Turkish economy was "Free Floating" policy in the beginning of year of 2001. Some precautions aiming at exhibition of capitalization and risk more realistically was performed in banking sector which is the major part of a financial system. Reinforcement process of the fiscal system have still been pursued. However it's possible to take long time recovering from these problems because of unstable macroeconomic policies. Turkey has one of the most extrovertiest economies with 53%'s foreign trade volume of national product in the world however it has suffered from unstable macroeconomic environment. Being achieved at policies on Free Floating, latent inflation targeting, independence of Central Bank, tight money and high primary balance targeting has positive effects on both of the expectations of financial units and macroeconomic stability. Furthermore one of the considerable improvements having positive effect is the integration of regulations with international standards.

After the annnouncement of reconstruction programme in banking sector in 2001, the fundemental mission of Central Bank was concluded at providing the stable prices, Being taken necessary precautions were also stipulated to achieve this aim.

The latest events in the world and Turkish Economy have clearly revealed that national economies and markets are how important in terms of the stability of the state and world economy. Consequently strength of the economic systems depends on the strenght of the financial foundations included by them.

The regional, financial and political foundations such as Europe Union have surpassed the national economies because of regeneration of world economy. Banking sector in EU possibly is the most important sector in EU as being all of the world. Macroeconomic indicators not only affect banking sector directly but also inform about general economical conditions. Macroeconomic indicators which comprise Maastricht criterion being so important for membership of EU are the primary restrictions.

After the implementation of the Second Banking Coordination Directive1 of 1993, banks from European Union countries can branch freely into other EU countries. The liberalisation of capital flows, the prospect of the European common market, the phenomenon of "disintermediation" (the deterioration of the role of banks as financial intermediaries), and the concern for the competitive pressure from foreign rivals have undoubtedly influenced the policy of domestic banks. The main result of the reorganisation of the credit systems has been a sharp growth in the number of concentration processes in EU countries: The enhanced competition has forced banks to look for a bigger size (in order to achieve economies of both scale and scope) as well as a better managerial capability (X-efficiency), in order to improve their overall efficiency. As a consequence, a reduction in the number of operating banks occurred in each EU countries during the last decade (Coccorese, 2004).

The above two tendencies (competition and concentration) seem to contrast each other, if we accept the theoretical proposition according to which a more concentrated market implies a lower degree of competition. They also raise questions about the opportunity to allow banks to rely on a significant market power, since this industry plays an essential role in economic development. Through regulatory barriers to entry in banking, the resulting monopoly profits would help the stability of the industry (Greenbaum and Thakor, 1995), but this situationwould also involve welfare costs, whereas banking competitionwould improve the efficiency of the whole financial system, with beneficial effects on macroeconomic performance. This outcome would be important for regional credit markets, especially in those countries like Turkey.

The characteristics of the banking industry have also a fundamental impact on the whole economy and its growth. Authors like Cameron (1967), Goldsmith (1969), McKinnon (1973) and Shaw (1973) have already pointed out the link between banks, financial markets and economic conditions, stressing that well-developed financial markets are essential to economic development. This relation has been established by recent empirical Works (King and Levine, 1993)

The structure of the banking sector surely has a primary role in economic growth and development. When market power is high, firms can increase prices and produce less goods and services, provoking inefficient resource allocation as well as reduced capital accumulation and growth. If some scholars are willing to accept a monopolistic or oligopolistic banking system, It is only because in this way it is easier to face the lack of information about the individuals asking for funds and the projects to be financed with the loans (which gives rise to problems of adverse selection and moral hazard).

The literature on the relationship between bank structure and macroeconomic performance is characterised by two groups of models: partial equilibrium models (focusing on particular aspects of the bank–borrower relationship, and not concerned with the overall economic impact of the assumed banking industry structure) and general equilibrium models (which take into account also the deposit side of banking as well as the influence of the banking structure on the economy, but sacrificing many details in the analysis of the relationship between banks and borrowers).

The most recent studies seem to emphasise that a concentrated structure can overcome the problems of information more efficiently (Guzman, 2000a). When identifying the overall economic impact, the partial equilibrium models (Petersen and Rajan, 1995; Schnitzer, 1998; Carminal and Matutes, 1997) find that the influence of a monopolistic structure of the banking industry on the whole economy is beneficial, or at worst ambiguous (for example, because it helps the stability of industry), while for the general equilibrium models (Cetorelli, 1997; Smith, 1998; Guzman, 2000b) this influence is harmful or at best ambiguous (their general belief is that only a more competitive banking system increases the level of economic activity and reduces the severity of the business cycle). Alternatively, it could be that local economic activity influences bank competition and their profitability. The existence of a relationship between financial markets and economic growth is generally recognized, mainly through cross-country growth regressions. Yet, researchers have not reached an agreement with regard to this relationship. While it seems that the level of financial development is a good predictor of economic growth, the empirical findings do not settle the issue of causality nor do they provide answers on the endogeneity of the variables used in the analysis (King and Levine, 1993; Levine and Zervos, 1998). Furthermore, the results may vary considerably across countries, owing to their different institutional characteristics and market size. It wasn't aimed to offer causal explanations of their findings, considering that the employed empirical tool is not able to throw light on them.

On the other hand, multivariate statistical methods are widely used in financial sector as other areas of applications. As a results, these methods are often applied to banking sector which is the major part of the financial system. Multivariate statistical methods are used not only for examining the banking sectors belonging to certain countries individually but also making mutually comparisons of banking sectors.

Because the countries are different from one other in terms of economical, social and political conditions In multivariate analysis, using variables that are common to objects and special to issue lead to obtaining more realistics and more interpretable findings.

The aim of this study is to reveal and to examine the relationships of macroeconomic indicators and performance ratios of the banking sector for the EU countries and Turkey through canonical correlation analysis.

2. Literatur Review on Performance Analysis

This section devoted to the methods for analyzing and evaluating the performances of financial institutions such as banks, saving and loan associations, insurance companies, etc. The authors of these earlier studies generally had to assume that "technical inefficiencies" were absent – an asumption that was needed (at least implicitly) because "return to scale" and "scope" are "frontier concepts" which become ambiguous, at best, when technical inefficiencies are present. Since engineering information on the technology of financial institutions is not available, studies of frontier efficiency rely on accounting measures of costs, outputs, inputs, revenues, profits, etc. To impute efficiency relative to the best practice within the available sample. However, there is really no consensus on the preferred method for determining the best-practice frontier against which relative efficiencies are measured (Cooper,1997). Frontier analysis provides an overall, objectively determined, numerical efficiency value and ranking of firms (also called X-efficiency in the economic literature) that is nor otherwise available. This attribute makes frontier analysis particularly valuable in assessing and informing goverment policiy regarding financial institutions.

Frontier analysis methods including also performance analysis roughly classified into three groups as ratio analysis, parametric and non-parametric statistical methods. These methods have pros and cons ad hoc. Giving general assumptions of underlying analysis, their pros and cons are summarized below.

At least five different types of approaches have been employed in evaluating the efficiency of financial institutions and branches. These methods differ primarily in the assumptions imposed on the data in term of (a) the functional form of the best-practice frontier (a more restrictive parametric functional form vs. a less restrictive nonparametric form), (b) whether or not account is taken of random error that may temporarily give some production units high or low outputs, inputs, costs, or profits, and (c) if there is random error, the probability distribution assumed for inefficiencies (e.g., half-normal, truncated normal) used to disentangle the inefficiencies from the random error.

Traditional ratio analysis are often used more than parametric and non-parametric analysis methods. This method is performed with observing the ratio which is obtained by the one input divided by the related output. However, If the number of inputs and outputs are greater than one , using only one ratio is not appropriate. To overcame from this drawback, multiple ratios are considered at the same time in practice. But in this case, Since these ratios couldn't be grouped, it would be difficult to evaluate and to interpret all together.

There is a observation set for parametric methods in general. It is asumed that the best performance is on regression line in this data set. While the observations which are on this regression line are defined as successful, the other observations which deviate from this line are defined as unsuccessful. Furthermore in this analysis it is assumed that there is a random error. The deviations in parametric methods are composed of two component named unsuccessful observation and random error. Distinguishing these two error components from each other is impossible. In practice, SFA (Stochastic Frontier Approach), DFA (Distribution-free approach) and TFA (Thick Frontier Approach) methods are widely used. The critiques about SFA are related to distributional asumptions. There are a lot of study of this issue. The statistical findings of these studies are (1) the inefficiencies are not normally distibuted (Bauer and Hancock 1993), (Berger 1993), (Berger, De Young 1997) and (2) random eror is not normally distributed (Greene, 1990).

Because of these critiques, DFA is considered more applicable. However the DFA method which is used for panel data, the performance of each bank is assumed fixed for a long period or it is stable at least, and measurement errors close to zero for a long period. These assumptions are valid under the condition of positive unsuccessful observations (Berger and Humphrey 1997).

TFA method differs from SFA and DFA in terms of distributional assumptions. The fundemantal distinctions between SFA, DFA and TFA are distributional assumptions of unsuccessful observations and random error that are differences between observed and expected values. There is no distributional assumption on these two components in TFA. In this method, they are assumed that only the maximum and minimum values of differences between observed and expected values are random error, and remaining values are unsuccessful observations (Berger and Humphrey 1997).

SFA and DFA methods are used more than TFA approach in literature. DFA method has surpassed the methods of SFA and DFA. However the discussions about which is better have gone on (De Young 1997; Allen and Rai 1996; Berger and Humpray 1997; Allen and Rai 1997).

Non-parametric methods based on linear programming techniques measure the distances to performance limit. The advantage of these methods is to be included multiple input and output variables in applications. However since they have not the term of random error, they exclude the measurement errors, the other errors by chance. Consequently they might obtain false limit of performance (Berger and Humprey 1997).

One of these methods is DEA (Data Enveloping Analysis) developed by Charnes,Cooper and Rhodes in 1978. In addition to being a mathematical programming, DEA is non-statistical and non-parametric. When we say it is non-statistical, we are implying that estimates are not based on any statistical distribution (e.g., the normal) and noise is not explicitly considered in the estimation.; that does not mean, however, that statistical tests of the various estimates cannot be performed. An alternative view is that DEA is deterministic. When we refer to DEA as being non-parametric, we are referring to the fact that we do not have to assume a particular functional relationship between the inputs and outputs; we do not have to assume any statistical distribution; and we do not have to estimate parameters based on assumed statistical distributions.

Free Disposal Hull (FDH) is a special case of the DEA model where the points on lines connecting to DEA vertices are not included in the frontier. Instead, the FDH production possibilities set is composed only of the DEA vertices and the free disposal hull points interior to these vertices. Because the FDH frontier is either congruent with or interior to the DEA frontier, FDH will typically generate larger estimates of average efficiency than DEA (Tulkens, 1993). Either approach permits effiiency to vary over time and makes no prior assumption regarding to form of the distribution of inefficiencies across observations except that undominated observations are 100% efficient.

Since there are multiple inputs and outputs, Using classical regression analysis is not appropriate (Neogi and Ghosh, 1994). Thus Canonical Correlation Analysis (CCA) is recommended for screening input and output variables (Sengupta, 1990). Furthermore it was also recommended to rank underlying cases (Friedman, 1998). CCA calculates common weights, u_r, v_i for all the units by maximizing the correaltion between linear combinations of two sets. The advantage of CCA is that the weights are given a closed form solution, although it was warned that weights are sensitive , i.e., some may even be negative. Furthermore, there is no guarantee that the canonical correlation will be significant (Timm, 2002).

3. Canonical Correlation Analysis

As developed by Hotelling (1936), the process of maximizing the correlation between two linear functions of two sets of random variables is known as *canonical correlation analysis.* The linear functions that yield the maximum correlations are termed *canonical variates.* The goal of canonical analysis is to find two sets of weights **a** and **b** such that each canonical variate is maximally correlated, subject to the restriction that each variate be orthogonal or uncorrelated with the previous linear combinations.

Canonical correlation analysis is employed in testing for independence of] two sets of variables. More importantly, it is used as a data-reduction method. Given a large number of variables, an investigator may be able to find a few linear combinations of the variables in each set to study the intercorrelations of the canonical variates and thus simplify the analysis in a coordinate system that will clarify the interrelationships.

Letting one set of variables exist with *p* elements and another set with q elements were $p < q$ and where Y' = $[Y_1, Y_2,..., Y_p]$ and X' = $[X_1, X_2, ..., X_q]$, two linear functions are needed, U = a'Y and V = b'X, of unit variance such that the) correlation between U and V is maximum. Thus we need to maximize

$$F_{UV} = \max_{a,b} \; a'\Sigma_{12}b \qquad (1)$$

subject to the constraints that $a'\sum_{11}a = b'\sum_{22}b = 1$. Using Lagrange multipliers, the function

$$F = a'\Sigma_{12}b - \frac{\rho_1}{2}(a'\sum_{11}a - 1) - \frac{\rho_2}{2}(b'\sum_{22}b - 1) \quad (2)$$

is to be maximized. Taking partial derivatives with respect to a, b, ρ_1 and ρ_2 and and equating them to 0, we have

$$\frac{\partial F}{\partial a} = \Sigma_{12}b - \rho_1\Sigma_{11}a = 0$$
$$\frac{\partial F}{\partial b} = \Sigma'_{12}a - \rho_2\Sigma_{22}b = 0$$
$$\frac{\partial F}{\partial \rho_1} = a'\Sigma_{11}a - 1 = 0$$
$$\frac{\partial F}{\partial \rho_2} b'\Sigma_{22}b - 1 = 0 \quad (3)$$

Multiplying the first equation in *(3)* by **a**', the second by **b**', and employing the constraints, the system of equations to solve becomes

$$-\rho\Sigma_{11}a + \Sigma_{12}b = 0$$
$$\Sigma_{21}a - \rho\Sigma_{22}b = 0 \quad (4)$$

where $\rho = \rho_1 = \rho_2 = a'\Sigma_{12}b$. Multiplying the first equation in (4) by and the second by $\Sigma_{12}\Sigma_{22}^{-1}$, (4) becomes

$$-\rho^2\Sigma_{11}a + \rho\Sigma_{12}b = 0\ \rho$$
$$\Sigma_{12}\Sigma_{22}^{-1}\Sigma_{21}a - \rho\Sigma_{12}\Sigma_{22}^{-1}\Sigma_{22}b = 0 \quad (5)$$

Adding the two equations in (5) yields the equation

$$(\Sigma_{12}\Sigma_{22}^{-1}\Sigma_{21} - \rho^2\Sigma_{11})a = 0 \quad (6)$$

Hence $\rho_1^2, \rho_2^2, ..., \rho_p^2$ and a_1, a_2,..., a_p are the roots and vectors, respectively, of the characteristic equation

$$|\Sigma_{12}\Sigma_{22}^{-1}\Sigma_{21} - \rho^2\Sigma_{11}| = 0. \quad (7)$$

Let $A = [a_1, a_2, ..., a_p]$, then $A'\Sigma_{11}A = I_P$ and $A'\Sigma_{12}\Sigma_{22}^{-1}\Sigma_{21}A = \Lambda_1$,

where Λ_1, is a diagonal matrix with roots $\rho_1^2, \rho_2^2, ..., \rho_p^2$.

Similarly, by multiplying the second equation in (4) by ρ and the first by $\Sigma_{21}\Sigma_{11}^{-1}$, (4) becomes

$$-\rho\Sigma_{21}a + \Sigma_{21}\Sigma_{11}^{-1}\Sigma_{12}b = 0$$

$$\rho\Sigma_{21}a - \rho^2\Sigma_{22}b = 0 \quad (8)$$

Adding these two equations leads to the characteristic equation

$$|\Sigma_{21}\Sigma_{11}^{-1}\Sigma_{12} - \rho^2\ \Sigma_{22}| = 0 \qquad (9)$$

The roots of this equation are $\rho_1^2, \rho_2^2, .., \rho_q^2$, with corresponding vectors $b_1, b_{2,\ldots,} b_q$ Let B = [b,,b_2 ,.. .,bq, then $B'\ \Sigma_{22} B$ = I_q, and $B'\Sigma_{21}\Sigma_{11}^{-1}\Sigma_{12}B = \Lambda_2$ where Λ_2 is a diagonal matrix with roots $\rho_1^2, \rho_2^2, .., \rho_q^2$.

The nonzero positive square roots ρ_i of the *roots* ρ_i^2 *are called the canonical correlations* between the *canonical variates* U_i = a_i' Y and V_i = b_i' X, for i = 1,..., $p < q$. From the second equation in (5), the relationship between a_i; and b_i is given by

$$b_i = \frac{\Sigma_{22}^{-1}\Sigma_{21}a_i}{\rho_i} \qquad (10)$$

The set of canonical variates U_i and V_i are clearly uncorrected and have unit variance,

$$\text{cov}(U_i, U_j) = \text{cov}(V_i, V_j) = \begin{cases} 1 & i = j \\ 0 & i \neq j \end{cases}$$

Furthermore, the covariance between V_i and U_i ',- is ρ_i for i = 1,. 1., p, and 0, otherwise:

$$\text{cov}(U_i, V_i) = \rho_i \qquad i = 1,..., p$$
$$\text{cov}(U_i, V_j) = 0 \qquad i \neq j$$

Thus if U_1 , U_2, and V_1 , V_2, and V_3 are canonical variates, the correlation matrix for U_1, U_2, V_1,, V_2, and V_3 has the form:

	U_1	U_2	V_1	V_2	V_3
U_1	1	0	ρ_1	0	0
U_2	0	1	0	ρ_2	0
V_1	ρ_1	0	1	0	0
V_2	0	ρ_2	0	1	0
V_3	0	0	0	0	1

Let *n* be the number of cases. Wilks's lambda statistic is thendefined as follows:

$$\Lambda = \prod_{i=1}^{p} (1 - \hat{\rho}_i^2) \qquad (11)$$

Bartlett (1941) used Wilks's lambda statistic to develop an approximate chi-square test with *pq* degrees of freedom:

$$\chi^2 = -(n - .5(p + q + 1))\ln\Lambda \qquad (12)$$

However, the most widely accepted test is Roa's (1951) approximate *F* test with (*pq*) and (*mt*−*pq*/2 + 1) degrees of freedom:

$$F = \left(\frac{1 - \Lambda^{1/t}}{\Lambda^{1/t}}\right)\left(\frac{mt - pq/2 + 1}{pq}\right) \qquad (13)$$

where *m*= *n*−.5(*p* + *q* + 1) and

$$t = \sqrt{\frac{p^2 q^2 - 4}{p^2 + q^2 - 5}} \tag{14}$$

The omnibus null hypothesis is that all of the eigenvalues (squared canonical correlations)are equal to zero. If this is rejected, one can infer that at least one of the eigenvalues is large. The largest canonical correlation is flagged as statistically significant and its contribution is removed. The process is repeated with the null hypothesis that all of the remaining canonicalcorrelations are equal to zero. Successive iterations continue until a non-significantresultis obtained or until all *p* possible canonical correlations have been flagged as significant, which ever comes first. To perform the test after removing *r* roots, Λ is modified as follows:

$$\Lambda = \prod_{i=r+1}^{p} \left(1 - \hat{\rho}_i^2\right) \tag{15}$$

and χ^2 is then distributed with $(p-r)(q-r)$ degrees of freedom.

3.1. Interpreting the canonical functions

Canonical functions are generally interpreted by examining the weight given each variable (the function coefficients) as well as the degree to which each variable is correlated with its own composite (the canonical loadings) and the opposite composite (and canonical cross-loadings). Given the mechanics of the CCA and the method of permuting the data, the distributions of the canonical cross-loadings would generally be the most useful for inferring the relative contribution of each variable. The permutation method forces the two sets of variables to be linearly independent. Hence, the expected value of the correlation between any given variable and the composite from the other set is zero. Distributions obtained from permuted data would indicate the extent to which these correlations (canonical cross-loadings) deviate from zero (either positively or negatively) when the two sets are randomly associated. However, a word of caution is in order. While the CCA does guarantee finding the largest possible correlations between corresponding pairs of composites given the constraint of orthogonality, it does not necessarily find the largest possible value for a given canonical cross-loading.

The canonical loadings are even more problematic than the cross-loadings. They address relationships among the variables *within* each set, but the permutation technique that is used here is designed to study the relationships *between* the two sets. Function coefficients are the most troublesome in that they are optimal (not maximal) weights; what is maximized is the correlations between composites. Large values of these optimal weights might simply reflect multicolinearity within the set rather than indicating some meaningful, substantive contribution of the variable. The distributions generated by the permutations indicate the range these “bouncing betas” cover given the characteristics of the data at hand.

4. Comparison of The EU Countries and TURKEY

The EU countries and Turkey are compared with two points of view. The macroeconomic indicators of the countries are considered in the first comparison. In the second persfective of comparison, these countries are compared in terms of general financial ratios which are often used in performance analysis. In this section The EU countries are classified into two groups as EU-15(before enlargment) and EU-10 (new members). The position of Turkey is examined in EU.

4.1. Comparison of EU and Turkey in terms of Macro Economic Indicators

Macroeconomic indicators which indicate the general economic conditions of the countries affect the banking sectors directly. Because of this reason, The EU contries and Turkey are compared in terms of these macroeconmic indicators:

1- GDP Growth
2- GDP Per Capita
3- Inflation
4- Unemployment of Total Labor
5- Balance of Current Account

4.1.1 GDP Growth Rate

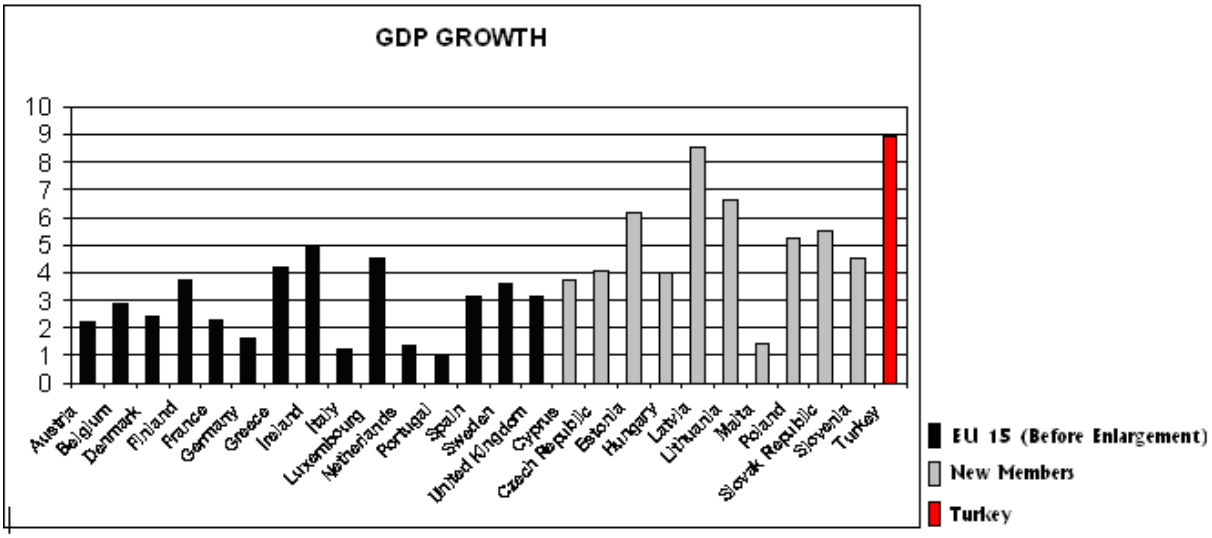


Figure 1. Bar Chart of GDP Growt Rate

If Turkey and EU countries evaluated from the GDP Growth Rate of view, the average of EU countries before the enlargment was 2.81%, whereas this ratio has been determined as 4.49% in the newly integrated countries. As a consequence from GDP Growth rate in the newly integrared contries seems to be relatively higher than the old ones. With regard to growth rate Turkey reached a relatively higher growth rate (av. 8.93%) than to the all countries within the union. Besides, Portugal is to be mentioned to with its least growth rate of 1.%

4.1.2 GDP Per Capita

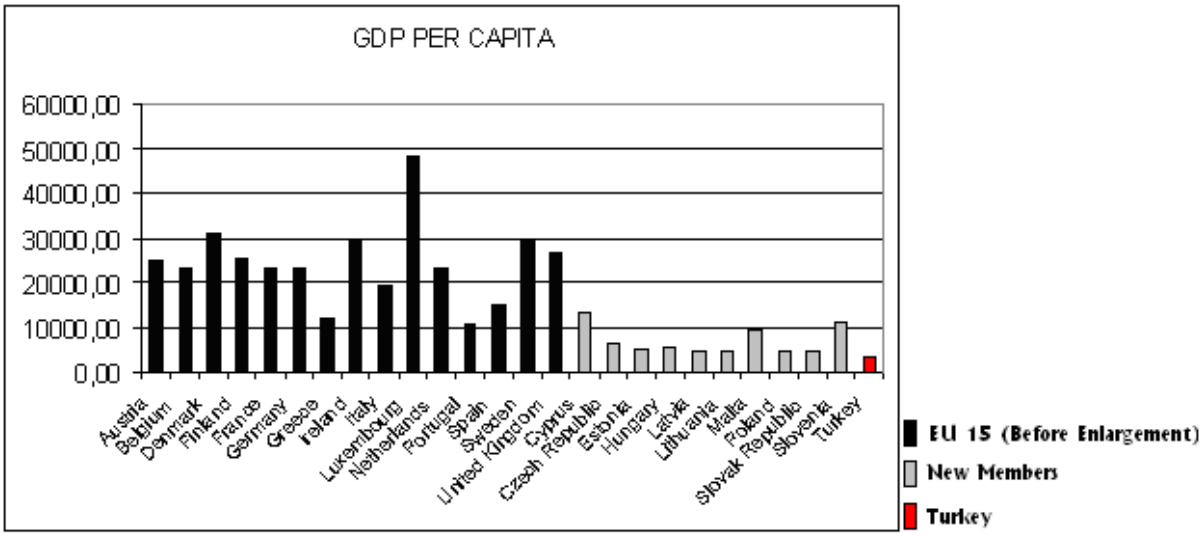


Figure 2. Bar Chart of GDP Per Capita

If these countries are compared in terms of GDP per capita ($), the average of EU-15 is $24175.40 , while this value for EU-10 is $6855,48. As seen from these statistics, in the old EU countries GDP per capita is 3.5 times as much as the new accepted countries. However GDP per capita of Turkey which is the least of all countries is $3196,86

4.1.3 Inflation

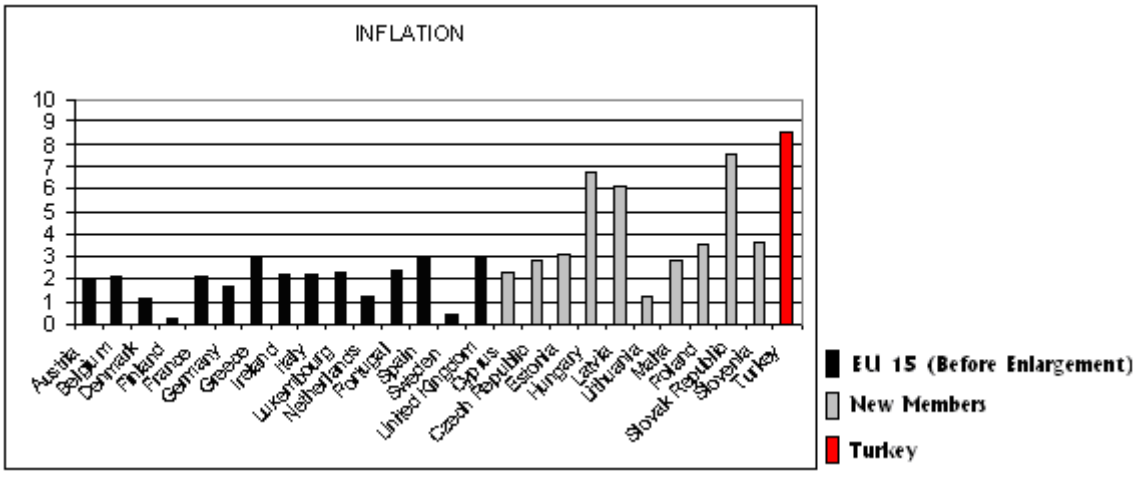


Figure 3. Bar Chart of Inflation

If Turkey and EU countries evaluated from the inflation, the average of EU countries before the enlargment was 1.92%, whereas this ratio has been determined as 3.98% in the newly integrated countries. As pointed from the above figure, in the newly integrated contries seems to be relatively higher than the old ones. Turkey has the most highest inflation (%8.6). Besides, Finland is to be mentioned to with its least inflation of 0.19 %.

4.1.4 Unemployment

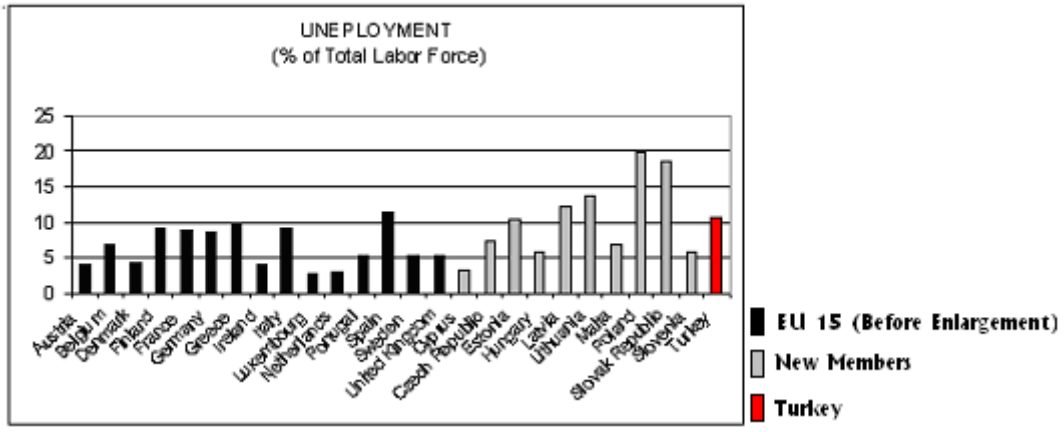


Figure 4. Bar Chart of Unemployment

If these countries are compared in terms of uneployment ratio (%of total labor force), the average of EU-15 is 6.47% , while this value for EU-10 is 10.37%. As seen from these statistics, in the newly integrated contries seems to be relatively higher than the old ones. Unemployment ratio of Turkey is 10.6 %. Furthermore Luxembourg has tle lowest unemployment ratio (2.6 %).

4.1.5 Balance Of Current Account

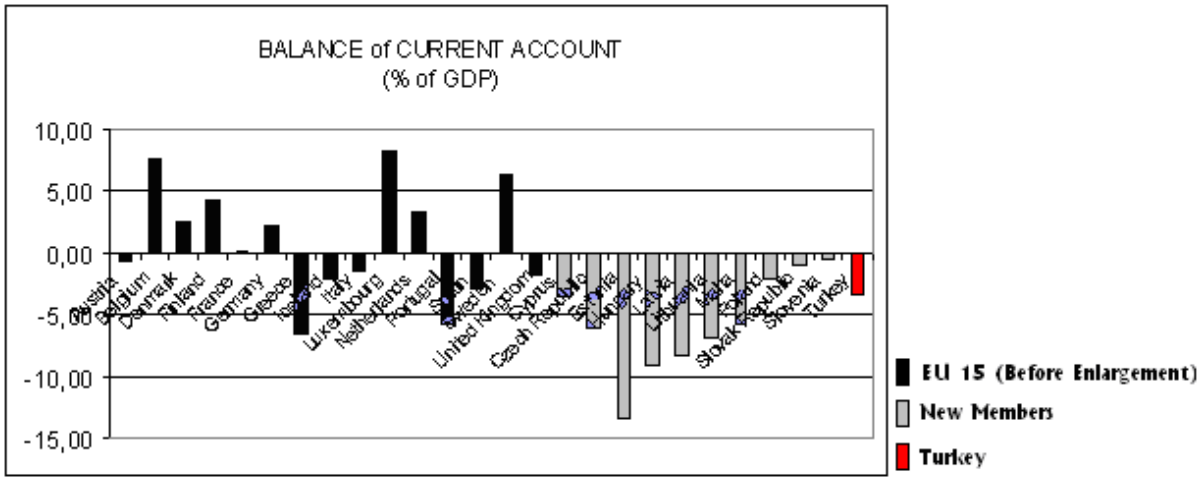


Figure 5. Bar Chart of GDP Per Capıta

If these countries are compared in terms of balance of current account (%of GDP), the average of EU-15 is 1.01% , while this value for EU-10 is -5.59 %. As seen from above bar chart, The sign of balance of current account for EU-15 is positive whereas for newly integrated EU-10 countries this value is negative. Balance of current account for Turkey is determined as -3.3 %.

4.2 Comparison of EU and Turkey in terms of Banking Performance Ratios

The comparisons of EU and Turkey in terms of banking sectors are carried out using some general performance ratios of the financial ratios. The names of these ratios are listed below.

1- ROA
2- ROE
3- Net Interest Income
4- Loans to Costumers
5- Deposits

4.2.1 Return On Assets (ROA)

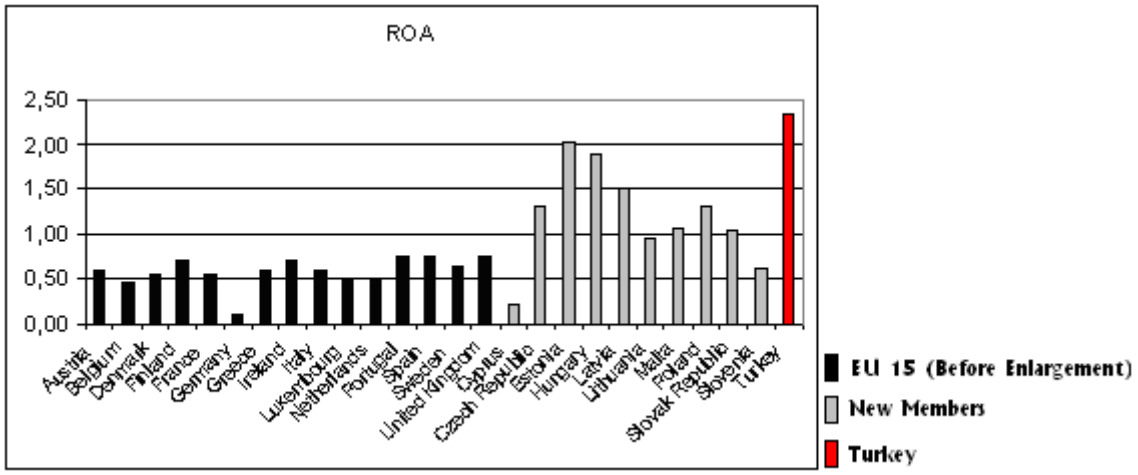


Figure 6. Bar Chart of Return On Assets (ROA)

If these countries are compared in terms of ROA (%of total assets), the average of EU-15 is 0.59 % , while this value for EU-10 is 1.19 %. As seen from these statistics, ROA of EU-15 is approximately two fold of the EU-10..Turkey has the highest ROA (2.33 %) Besides, Germany is to be mentioned to with its least ROA of 0.12 %.

4.2.2 Return on Equity (ROE)

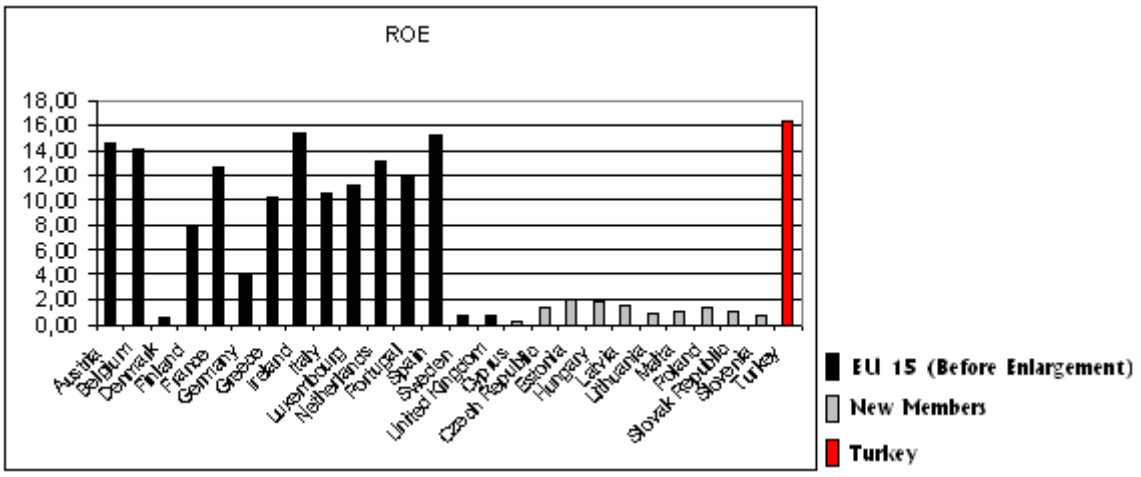


Figure 7. Bar Chart of Return On Equity (ROE)

If these countries are compared in terms of roe (%of equity), the average of EU-15 is 9.49% , while this value for EU-10 is 1.19 %. As seen from above bar chart, the shareholder's equity belonging to EU-15 country is more profitable than EU-10. Turkey has the highest ROE (16.34 %) Besides, Cyprus is to be mentioned to with its least ROE of 0.21 %.

4.2.3 Net Interest Income

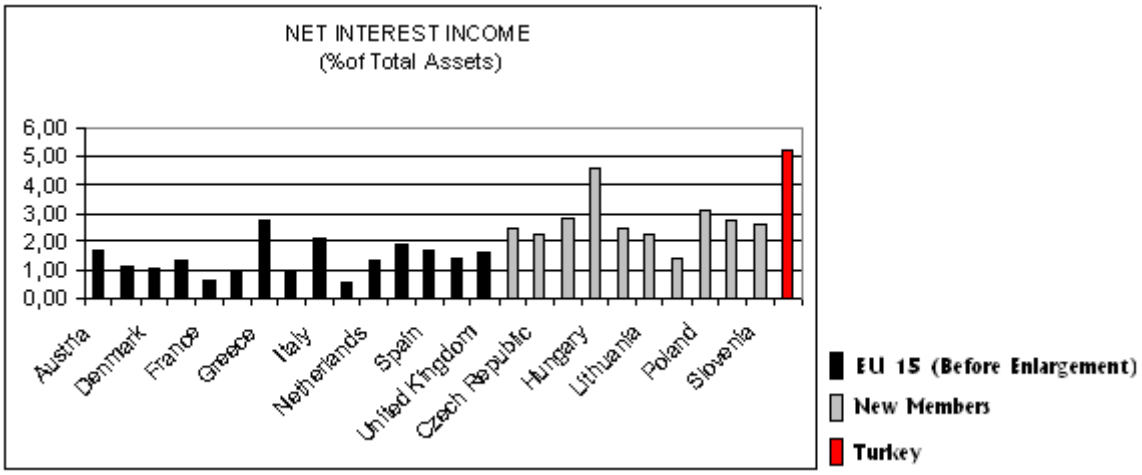


Figure 8. Bar Chart of Net Interest Income

If these countries are compared in terms of net interest income (%of total assets), the average of EU-15 is 1.41 % , while this value for EU-10 is 2.68 %. As seen from these statistics, net interest income in EU-10 is more than EU-15. Turkey has the highest net interest income

(5.25 %) in the EU including Turkey. Besides, France is to be mentioned to with its least net interest income of 0.66 %.

4.2.4. Loans To Costumers

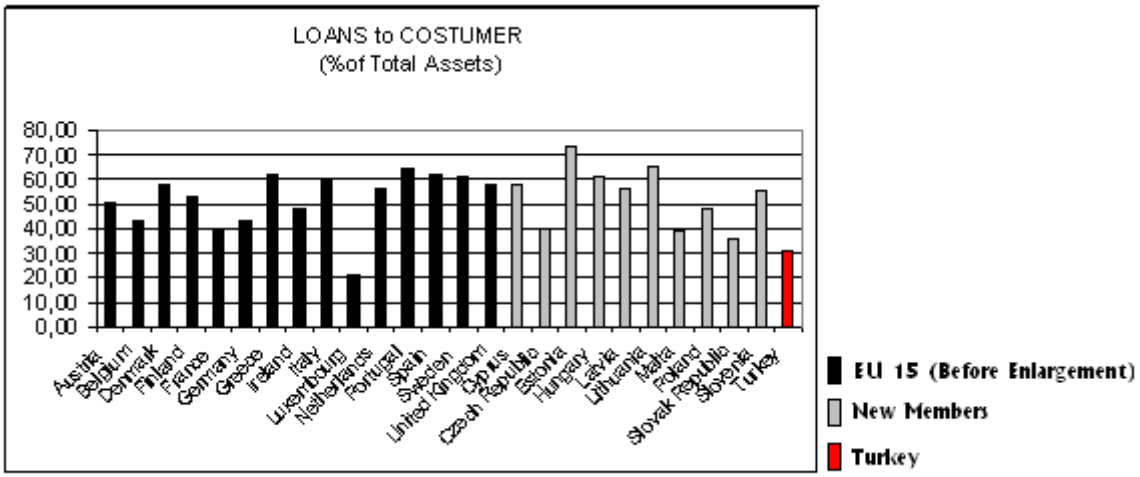


Figure 9. Bar Chart of . Loans To Costumers

In evaluating in terms of loans to costumers, It is seen that there are no substantial diffrences between the EU-15 before enlargment and newly integrated EU-10 countries. According to underlying ratio, the average of EU-15 is 51.83 % and the average of EU-10 is found 53.27 %. Luxembourg is to be mentioned to with its least loans to costumer ratio of 20.57 %. This ratio for Turkey is 30.92 % which is less than EU-10 and is the second order after Luxembourg.

4.2.5 Deposits

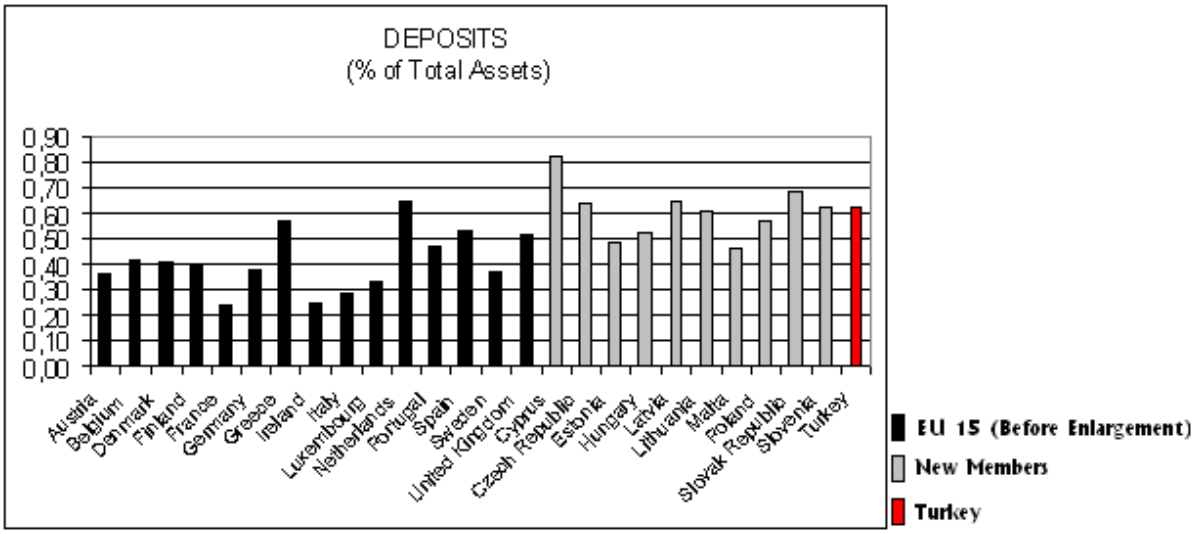


Figure 10. Bar Chart of Depozits

If these countries are compared in terms of the ratio of deposits divided by total assets, the average of EU-15 is computed as 0.41 %, while underlying ratio is determined for EU-10 as 0.6 1% which is higher than the EU-15. The ratio of deposits for Turkey is 0.62 % which is close to EU-15.

5. Application

In this section, to determine whether a relation exists between macroeconomic indicators labeled X and banking ratios labeled Y, Canonical Correlation Analysis (CCA) was applied. With this analysis the impact of macroeconomic indicators on banking ratios has been investigated. In other words, banking performance ratios are the criterion variables and the macroeconomic indicators are the predictor ones. The variables used and their descriptive statistics are summarized in Table 5.1.

The data of the year 2004 for these two sets of variables are from; World Developmant Indicators 2005 and EU Banking Sector Stability 2005 for all of the EU countries and Turkey.

Tablo 5.1 Definitions of The Variables Used in The Analysis and Their Descriptive Statistics

Sets	Variables	LABEL	Definition	Mean	Standard deviation
Y	y1	INTEREST	Net interest income /Total assets	2,05	1,11
	y2	ROA	Net profit/Total assets	0,89	0,54
	y3	ROE	Net Profit/Share holders' equıty	6,56	6,09
	y4	LOAN	Loans to costumers/Total assets	51,58	12,18
	y5	DEPOZIT	Depozits/Total assets	0,49	0,14
X	x1	GDPG	GDPgrowth annual	3,88	2,09
	x2	GDPP	GDP per capita	16707	11304
	x3	INF	Inflation(consumer prices, annual)	2,97	2,09
	x4	UNP	Uneployment(total of total labor)	8,13	4,42
	X5	BLN	Balance of current account (% of GDP)	-1,70	5,25

Tablo 5.2 Correlations of Banking Ratios and Macroeconomic Indicators

	INTEREST	ROA	ROE	LOAN	DEPOZIT	GDPG	GDPP	INF	UNP	BLN
INTERES T	1									
ROA	**0,788**	1								
ROE	-0,155	-0,129	1							
LOAN	0,125	0,026	-0,249	1						
DEPOZIT	0,563	0,283	-0,412	0,158	1					
GDPG	0,595	0,666	-0,163	-0,096	0,422	1				
GDPP	-0,751	-0,647	0,326	-0,273	-0,647	-0,443	1			
INF	**0,784**	**0,708**	-0,050	-0,262	0,447	0,601	-0,591	1		
UNP	0,385	0,396	-0,210	-0,028	0,276	0,479	-0,607	0,421	1	
BLN	-0,588	-0,633	0,287	-0,457	-0,404	-0,356	**0,784**	-0,430	-0,300	1

The correlations of variables was given in Table 5.2. The correlations between INTEREST and ROA is the highest and positive with value of 0.788. This pozitive correlation is followed by the correlations between INTEREST and INF with value of 0.784 ; BLN and GDPP with value of 0.784 and INF and ROA with value of 0.708.

The values of the highest negative correlations in descending order are -0.751, -0.647, -0.633 and -0.607 which are between INTEREST and GDPP, ROA and GDDP, ROA and BLN, and GDPP and UNP respectively. Furthermore excluding ROE, the correlations of all pairs of criterion variables are positive.

Stage I: CCA with all of the variables

The sample canonical correlations obtained from the CCA, and their significance tests are summarized in the Table 5.3. The value of first canonical correlation is 0.94, and the F test indicates that it is statistically significant at an alpha level of 0.001. The remaining canonical correlations are not statistically significant. Hence, the correlations between the two sets of variables coluld be accounted for by just one pair of canonical variates.

Tablo 5.3 Canonical Correlations and Their Significance Tests

Variate Number	Canonical Correlation	R-Squared	F-Value*	Num DF	Den DF	Prob Level	Wilks' Lambda
1	**0,940351**	**0,884260**	3,58	25	61	**0,000026**	0,034894
2	0,752326	0,565995	1,58	16	53	0,107936	0,301491
3	0,492513	0,242569	0,79	9	44	0,628008	0,694671
4	0,251435	0,063220	0,42	4	38	0,793270	0,917140
5	0,144795	0,020966	0,43	1	20	0,520284	0,979034

*F-value tests whether this canonical correlation and those following are zero.

In the case of using only one pairs canonical variate, the redundancy analysis was given in the

Table 5.4 Redundancy Analysis

Canonical Variate Number	Variation in these Variables	Explained by these Variates	Individual Percent Explained
1	Y	V_1	42,5
1	Y	U_1	37,6
1	X	V_1	45,9
1	X	U_1	51,9

The values of the Table 5.4 may be explained as follows:
42.5 percent of total variation in Y variables is explained by yhe first Canonical Variate of Y.
37.6 percent of total variation in Y variables is explained by the first Canonical Variate of X.
45.9 percent of total variation in X variables is explained by the first Canonical Variate of Y.
51.9 percent of total variation in X variables is explained by the first Canonical Variate of X..

Thus, the redundancy measure of .376 for the first canonical variate suggests that about 38 % of the variance in the criterion variables is accounted for by the predictor variables. Similarly, about 46 % of the variability in macroeconomic variables is accounted for by a linear combination of the banking ratios.

The significant canonical variates become, using standardized variables,

$$U_1 = -0.35\ GDPG + 0.73\ GDPP - 0{,}42\ INF + 0{,}28\ UNP - 0{,}16BLN \quad (16)$$

$$V_1 = -0.43\ INTEREST - 0.39\ ROA - 0{,}02\ ROE + 0{,}13\ LOAN - 0{,}38\ DEPOZIT \quad (17)$$

where the correlation between U_1 and V_1 is $r_1 = 0.94$, so that the proportion of variance common to the two canonical variates is $r_1^2 = 0.88$.

The coefficients of the variables in (16) and (17) are canonical weights. The canonical weights of the first canonical variate for the predictor variables (i.e., U_1) suggest that the variables , GDPP, INF and GDPG are more influential in forming the first canonical variate. According to absolute values of weights, the variables in descending order are: GDPP, INF, GDPG, UNP and BLN. In this ordering, the signs of weights belonging to GDDP and UNP are pozitive, and the signs of remaining weights are negative. Hence, the countries in which GDDP is less while GDPG and INF are higher, the scores of U_1 are higher in magnitude. However the signs of underlying scores will be negative.

If the first canonical variate for criterion variables (i.e., V_1) is evaluated in terms of canonical weights, It suggest that the variables INTEREST, ROA and DEPOZIT are more inluential in forming the first canonical variate. The weights of LOAN and ROE are quite small respect to INTEREST, ROA and DEPOZIT. Hence, macroeconomic variables is not sufficient for explaining LOAN and DEPOZIT. In sum, V_1 is a canonical variate which arise from income and depozit and then V_1 may be called as the linear combination of incomes and depozits.

Investigating the canonical variates further, it is of interest to determine the correlation of each canonical variate for a set with the individual variables within the set which are called canonical ladings. The canonical loadings for the first variates are given in the Table 5.5 and Table 5.6.

Table 5.5 The Canonical Loadings for V_1

	INTEREST	ROA	ROE	LOAN	DEPOZIT
V_1	-0.94	-0.84	0.22	0.01	-0.71

As revealed from the Table 5.5, Canonical loadings support the interpretations about the canonical weights in terms of magnitudes and signs. There are higher correlations between the V_1 variate and INTEREST, ROA and DEPOZIT variables.

Table 5.6 The Canonical Loadings for U_1

	GDPG	GDPP	INF	UNP	BLN
U_1	-0.73	0.83	-0.87	-0.45	0.63

From the Table 5.6, the highest correlation is -0.87 which is between U_1 and INF. The second highest correlation is 0.83 belonging to GDPP. This correlation is followed with ones of GDPD and BLN. The lowest correlation is -0.45 which is belonging to UNP.

Besides using correlation within a set to beter understand canonical variates, those relationships between canonical variates in one set and the individual variables in other set which called as canonical cross-loadings should also be examined. The canonical cross loadings of V_1 and U_1 are given in the Table 5.7 and Table 5.8 respectively.

Table 5.7 Canonical Cross Loadings for V_1

	GDPG	GDPP	INF	UNP	BLN
V_1	-0.69	0.78	-0.82	-0.42	0.59

From the Table 5.7, INF in the predictor variables has the most influence on V_1. This is followed by GDPP, GDPG, BLN and UNP.

Table 5.8 Canonical Cross Loadings for U_1

	INTEREST	ROA	ROE	LOAN	DEPOZIT
U_1	-0.88	-0.78	0.21	0.01	-0.66

As seen from the Table 5.8, INTEREST in the criterion variables is most influenced by the first canonical variate of macroeconomic indicators. While this is followed by ROA and DEPOZIT, the cross-correlations of LOAN and ROE are fairly less. Thus it is mentioned that there are the relations between INTEREST, ROA, DEPOZIT and macroeconomic variables whereas ROE and LOAN can not be explained by macroeconomic variables.

Stage II: CCA without ROE and LOAN

CCA was applied excluding ROE and LOAN from the variable set of Y, Because

1) The weights of these variables in (17) were so low that they couldn't be explained by X's.
2) Since the signs of variables were pozitive, while the signs of remaining variables were negative, they violated the sameness of signs.

Excluding ROE and LOAN, the reslts from the analysis are summarized below.

Table 5.9 Canonical Correlations and Their Significance Tests

Variate Numbe	**Canonical Correlatio**	**R-Squared**	**F-Value**	**Num DF**	**Den DF**	**Prob Level**	**Wilks' Lambda**
1	**0,936961**	**0,877895**	4,93	15	50	**0,000009**	**0,081699**
2	0,494445	0,244476	1,06	8	38	0,412718	0,669087
3	0,338241	0,114407	0,86	3	20	0,477307	0,885593

From the table 5.9, the value of first canonical correlation is about 0.94 and the F test indicated that it is statistically significant at an alpha level of 0.001. Hence, the correlations between the two sets of variables coluld be accounted for by just one pair of canonical variates. The redundancy analysis was given in the Table 5.10.

Table 5.10 Redundancy Analysis

Canonical Variate Number	Variation in these Variables	Explained by these Variates	Individual Percent Explained	Cumulative Percent Explained
1	Y	V_1	70,4	70,4
1	Y	U_1	61,8	61,8
1	X	V_1	46,8	46,8
1	X	U_1	53,4	53,4

The redundancy measure of .618 for the first canonical variate suggests that about 62 % of the variance in the criterion variables is accounted for by the predictor variables. Similarly, about 47 % of the variability in macroeconomic variables is accounted for by a linear combination of the banking ratios. As seen fron the Table 5.10, comparing to the Table 5.4, the explained variances was increased through excluding ROE and LOAN.

The significant standardized canonical variates are:

$$U_1 = 0.36\,GDPG - 0.74\,GDPP + 0.32\,INF - 0.29\,UNP + 0.06\,BLN \quad (18)$$

$$V_1 = 0.36\,INTEREST + 0.45\,ROA + 0.38\,DEPOZIT \quad (19)$$

where the correlation between U_1 and V_1 is $r_1 = 0.937$, so that the proportion of variance common to the two canonical variates is $r_1^2 = 0.878$.

The effect of the X variables on the Y variables is assessed by the signs of the standardized coefficients or loading. Hence, The higher GDPG, INF and BLN are, the higher banking performance become. However, The higher GDPP and UNP are, the lower banking performance are obtained. The countries in which GDPP and UNP is less while GDPG, INF and BLN are higher, the scores of U_1 are higher and pozitive. According to magnitude of loadings, they are ordered as GDPP, GDPG, INF, UNP and BLN for U_1, and they are ordered as ROA, DEPOZIT and INTEREST for V_1.

The canonical loadings for the first variates are given in the Table 5.11 and Table 5.12.

Table 5.11 The Canonical Loadings for V_1

	INTEREST	ROA	DEPOZIT
V_1	0.94	0.85	0.72

The highest correlation(0.94) of V_1 is with INTEREST. This followed by ROA and DEPOZIT respectively.

Table 5.12 The Canonical Loadings for U_1

	GDPG	GDPP	INF	UNP	BLN
U_1	0.73	-0.87	0.83	0.45	-0.70

From the Table 5.12, the highest correlation is -0.87 which is between U_1 and GDPP. The lowest correlation with V_1 belongs to UNP.

Table 5.13 Canonical Cross Loadings for V_1

	GDPG	GDPP	INF	UNP	BLN
V_1	0.68	-0.81	0.78	0.43	-0.66

From the Table 5.13, INF in the predictor variables has the most pozitive influence on V_1. This is followed by GDPG and UNP. Hence, The higher INF, GDPG and UNP are, the higher banking profitability and deposit performance are. On the other hand, GDPP has the most negative effect on V_1. Thus, the higher GDPP and BLN are, the lower banking profitability and deposit performance are.

Table 5.14 Canonical Cross Loadings for U_1

	INTEREST	ROA	DEPOZIT
U_1	0.88	0.79	0.67

From the Table 5.14, INTEREST in the criterion variables is most influenced by the first canonical variate of macroeconomic indicators. This is followed by ROA and DEPOZIT.
The scores of countries computed from (18) for U_1 and from (19) for V_1 are given in the Table 5.15.

Tablo 5.15 The Scores of Countries

Country	**U1**		**V1**	
	Score	**Rank**	**Score**	**Rank**
Luxembourg	-1,57566	1	-1,25193	24
Denmark	-1,16758	2	-0,82101	21
Germany	-1,00531	3	-1,29847	25
Finland	-0,99484	4	-0,64234	17
Sweden	-0,96074	5	-0,738	19
France	-0,85251	6	-1,40661	26
Italy	-0,80856	7	-0,79001	20
Netherland	-0,74214	8	-0,15683	14
Austria	-0,67454	9	-0,67996	18
United Kin	-0,58341	10	-0,21874	15
Belgium	-0,53557	11	-0,83829	22
Ireland	-0,4978	12	-1,13236	23
Spain	-0,24431	13	-0,08824	12
Portugal	-0,03346	14	-0,23037	16
Malta*	0,053927	15	-0,137	13
Greece	0,209874	16	0,176047	11
Poland*	0,341786	17	0,879094	5

Tablo 5.15. Cont.

Cyprus*	0,381264	18	0,425702	8
Lithuania*	0,591591	19	0,414357	9
Czech Republic*	0,697185	20	0,772424	7
Slovenia*	0,755037	21	0,307924	10
Estonia*	0,887859	22	1,171877	3
Slovak Republic*	1,116818	23	0,845172	6
Hungary*	1,415932	24	1,76107	2
Latvia*	1,775748	25	1,090636	4
Turkey**	2,449401	26	2,585859	1

*new member state(ten countries, after enlargment)
**candidate country

U_1, which is the linear combination of macroeconomic indicators leading the maximum correlation with V_1 (the linear combination of performance ratios), It can be mentioned that it is a index indicating the relative economical condition. According to underlying index, as seen from the Table 5.15, Luxembourg, Denmark and Germany share the first three ranks. However the last three ranks belong to Turkey, Hungary and Estonia respectively. When the scores from U_1 are examined, it is determined that newly integrated countries (EU-10) are in last ranks because they have less scores than the EU-15 (before enlargment). Although Greece is in EU-15, he is behind of Malta which is a newly integrated country. Turkey is the latest in this ranking.

Turkey which is the last with regard to economical index, he is the first in terms of performance index which is the linear combination of INTEREST, ROA and DEPOZIT. It is followed by Hungary and Slovak Republic. Newly integrated countries of EU are last orders. France is the last with regard to banking performance index whereas it is sixth with regard to economical index. In general, for the countries with the higher INF, GDPG,UNP and the lower GDDP, BLN (most of the the observed value of BLN are negative) banking performance index is becoming higher.

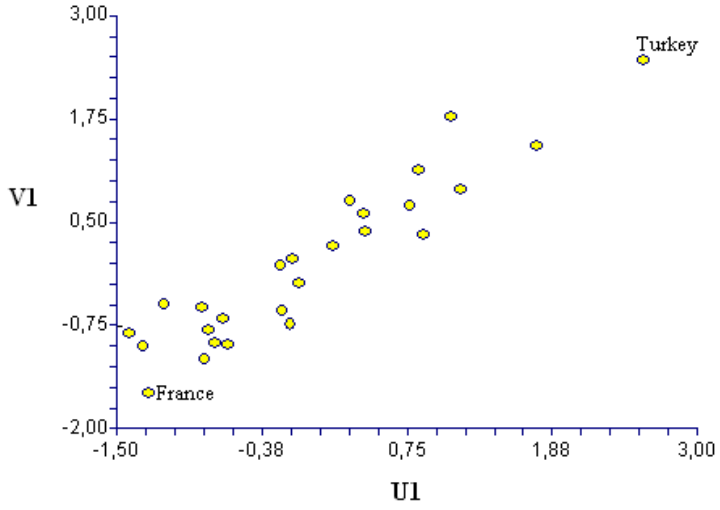


Figure 11. The Scatterplot of V_1 vs U_1

The scatterplot of V_1 vs U_1 is depicted in Figure 5.1. As seen from the figure, the strong linear relation is obtained by CCA.

6. Conclusions

In the integration period Turkish Banking Sector seems to be one of the most promising sector and in addition to, owing to integration achivement in the last period this sector has been gaining a more stable structure. Besides, in comparisons made within the newly integrated 10 countries, Turkish Banking Sector found to be relatively superior from many points of view. While the new EU countries having a relatively higher GDP growth rate than the old ones. Turkey arrived at the most higher rrowth rate being 8.93%. From the point of GDP per capita, in the old EU countries GDP per capita is 3.5 times as much as the new accepted countries. With is $3196.86 Turkey has the lowest level within all countries. From the unemployment rate, on the other hand, the old countries gained an average of 6.47% whereas the same rate in the new ones is 10.37%. Turkey reaches the highest level with its 10.60%. If inflation rate considered, the old countries reach an average of 1.92% and the old ones 3.98%. Turkey, with its 8.6% average is leading among all countries. With regard to these indicators considered Turkey is ranking far behind besides inflation rate. On the contrary Turkey's macroeconomic indicators don't differ significantly from the EU countries integrated lately.

From the points of net interest revenues, contrary to inflation rate, Turkey gained the highest percentage (5.25%) in the interest revenues within all EU countries. The old countries have an average 1.41% and the new ones 2.68%. But if customer credits are being considered there is no important discrepancies between old and new countries. Turkey's rate is 3.92%. If the share of depozits in the total assets regarded, the old countries have an average of 0.41% whereas the new ones have 0.61%. Turkey with its 0.62% has the highest level. If a general evaluation made by considering performance indicators in relatively banking sector, Turkey seems to be in good position within all EU countries which contradicts to macroeconomic indicators.

As reflected in the results of economical correlation, the variables such as interest income, asset profitability, the ratio of depozits to total assets are correlated with macroeconomic varables. Besides, one point which deserves to mention, that the countries being well with regard to macroeconomic indicators are bad from the point of banking profitability performance. This result agrees with the fact that economic growth affects the profitability in banking sector negatively. Owe to negative macroeconomic indicators in Turkey, the banking sector in Turkey heavily differ from other EU countries with regard to profitability performance.

At last it is worth to mention that the savied profitability in the banking sector, which arises from the negative macroeconomic indicators, should arrive at real value, if the economic indicators, especially inflation should be regulated so as to cope with the EU standards.

REFERENCES

Banking Structures In The New EU Member States, European Central Bank Publications, Janurary 2005.

Bartlett,M.S., (1941).“The statistical significance of canonical correlation”, *Biometrika* 32 (1),29-37

Berger, A. and De Young, R., (1997) “Problem loans and cost efficienency in commercial banks”, *Journal of Banking and Finance*, No:6.

Berger, A. and Humphrey, (1997). D. “Efficiency of financial institutions: international survey and directions for future research”, *European Journal of Operational Research*, Vol. 98.

Cameron, R., (1967).Banking at the Early Stage of Industrialization. Oxford University Pres, New York.

Carminal, R. and Matutes C., (1997). Bank solvency, market structure, and monitoring incentives, CEPR Discussion Paper 1665.

Carroll, Charles., (2005) “Canonical correlation analysis : assessing links between multiplex networks”, *Social Networks*,Article in Press.

Cetorelli, N., (1997). “The role of credit market competition on lending strategies and on capital accumulation”, *Federal reserve bank of Chicago working paper* 97 .

Coccorese, P., (2004). “Banking competition and macroeconomic conditions: a disaggregate analysis*”, Journal of International Financial Markets*, Institutions & Money, 14, 203-219.

Cooper W.W., (1997) “New approaches for analyzing and evaluating the performance of financial institutions” , *European Journal of Operational Research*, 98, 170 – 174.

De Young R., (1997).“Comment on ‘Operational Efficiency in Banking: An International Perspective”, *Journal of Banking and Finance*, N0:10.

Dokuzuncu Kalkınma Planı, (2006). Finansal Hizmetler (Mali Piyasalar, Finans Kurumları, Bankacılık, Sigortacılık), Özel İhtisas Komisyonu, Ankara.

EU Banking Sector Stability, October 2005,EU Central Bank Pres,Germany.

Everitt B.S and Dunn G.,(1983). Advanced Methods of Data Exploration and Modelling. Heinemann Educational Books Inc., New Hampshire.

Friedman L. and Sinuany-Stern Z., (1998).“ Combining ranking scales and selecting variables in the dea context: the case of industrial branches”, *Computers and Operations Research*, 25(9), 781-791.

Goldsmith, R.W., (1969).Financial Structure and Economic Development. Yale University Pres, New Hawen.

Greeenbaum, S. I., and Thakor A. V.,(1995). Contemporary Financial Intermediation, Dryden Press, Forth Worth.

Guzman, M.G., (2000a). "The economic impact of bank structure: a review of recent literature, economic and financial review." *Second Quarter Federal Reserve Bank of Dallas*, pp. 11–25.

Guzman, M.G.,(2000b). "Bank Structure, Capital Accumulation, and Growth: A Simple Macroeconomic Model", *Economic Theory*,16, 421–455.

İnan, E. Alpan,(2000). "Banka Etkinliğinin Ölçülmesi ve Düşük Enflasyon Sürecinde Bankacılıkta Etkinlik", *Bankacılar Dergisi*, Sayı 34.

Hair F. J, Anderson E.R., Tatham L R., Black C W.,(1992) Multıvanate Data Analysıs. Prentice Hall Inc., New Jersey.

Hotelling ,H.,(1936).Relations between two sets of variables.*Biometrika* 28(3/4), 321-377

Kalaycı Şeref,(2005). SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri, Asil Yayın Dağıtım Ltd. Şti., Ankara.

King, R.N. and Levine, R.,(1993). "Finance and Growth: Schumpeter Might Be Right", *Quartely Journal of Economics*, 108, 717-737.

Levine, R., Zervos, S.,(1998). Stock markets, banks and economic growth. American Economic Review88, 537–558.

Krzanowski W. J.,(1998). Principles of Multivariate Analysis. Clarendon Press, Oxford.

Kurt G.,(1992). Çok Değişkenli İstatistiksel Analiz Tekniklerinden Çok Boyutlu Ölçekleme ve Bir Uygulama (Doktora Tezi). Marmara Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.

McKinnon R.I.,(1973). Money and Capital in Economic Development, Brooking Institutions, Washington , DC.

Manly F. J. B.,(1994). Multivariate Statistical Methods. Chapman & Hail, London.

Mardia K. V and Kent J. T and Bıbby J. M.,(1989). Multivariate Analysis. Academic Press, London.

Neogi, C. And Ghosh , B.,(1994). " Intertemporal efficiency variation in Indian Manufacturing Industries", *The Journal of Productivity Analysis*, 5, 301-324.

Özdamar K.,(1999). Paket Programlar ile İstatistiksel Veri Analizi (Çok Değişkenli Analizler). Kaan Kitabevi, Eskişehir.

Petersan, M.A. and Rajan, R.G., (1995). " The effect of credit market competition on lending relationships", *Quartely Journal of Economics*, 110, 407-444.

Schnitzer, M., (1998)." On the role of bank competition for corporate finance and corporate control in transition economies", CEPR Discussion Paper 2013.

Sengupta, J.K., (1990)."Tests of Efficiency in Data Envolope Analysis", *Computers and Operation Research*, 17(2), 123-132.

Shaw , E.S., (1995).Financial Deepening in Economic Development, Oxford University Pres, New York..

Smith, R.T., (1998). "Banking competition and macroeconomic performance", *Journal of Money, credit and banking*, 30, 793-815.

Tatlıdil H.,(2002). Uygulamalı Çok Değişkenli İstatistiksel Analiz. Cem Web Ofset Ltd. Şti., Ankara.

Timm, H. Neil., (2002)."Applied Multivariate Analysis", Springer-Verlag New York Inc., USA.

Tulkens, H., (1993). " On FDH efficiency analysis: Some methodological issues and application to retail banking, coutrs, and urban transit ", *Journal of Productivity analysis*, 4, 183-210.

Yetim Sedat., (2005). "Türkiye ve Yeni Üye Avrupa Birliği Ülkeleri Bankacılık Sistemleri Karşılaştırması", *BDDK ARD Çalışma Raporları*, Ankara.

http://www.bddk.org.tr. "Bankacılık Sektörü Değerlendirme Raporu", BDDK Yayınları, 9.10.2004.

http://www.publications.worldbank.org/WDI/, "World Development Indicators 2005", 08.03.2006.

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

CLIMATE CHANGE AND BUSINESS STRATEGY

Olivier BOIRAL
Faculté des sciences de l'administration Université Laval Québec, Canada G1K 7P4
Olivier.Boiral@mng.ulaval.ca

The coming into force of the Kyoto Protocol raises many questions about the advantages, costs and strategic impacts of greenhouse gas reduction endeavours. The implications of the protocol are all the more difficult to foresee given that the opinions on this issue are often contradictory and that assessing the economic and organizational consequences of GHG reduction measures is quite challenging. In this context, many managers are perplexed about the strategy to adopt with respect to global warming, which is increasingly raising concerns among organizations and the public. The objective of this conference is twofold, namely to expose the different kinds of responses that organizations may adopt to cope with climate change issues, and to show the relevance of a proactive strategy.

Introduction

For an increasing number of organizations, the implementation of a policy to reduce greenhouse gas is not simply a matter of a socially responsible commitment, but also one of a long term strategy to meet the emerging constraints and opportunities which have long been neglected . Nevertheless, relatively few organizations have up to now implemented such a policy. According to a study conducted recently among managers of the top 500 companies in the world, 80% of respondents considered that their organization would be affected by the consequences of global warming and the ensuing regulations. However, less than half of these companies have actually implemented measures to meet this challenge . This asymmetry between the importance of this issue and the relative lack of corporate commitment can be partly explained by the widely-shared perception that environmental actions entail costs that affect productivity . This perception, as well as the complexity and the uncertainties concerning climate change, tend to result in a resistance to the rising pressure to reduce greenhouse gas emissions . Nevertheless, this resistance cannot be generalized. Examples of organizations that are actively supporting the Kyoto Protocol and that have significantly committed themselves to reducing their greenhouse gas emissions, such as Shell, BP, Microelectrolics and DuPont, show that organizational responses to climate change are not necessarily negative. The objective of this article is to analyse the main types of organizational responses to climate change issues and to show the relevance of fostering a proactive strategy.

This article begins by examining the Kyoto Protocol and the implications of its implementation for organizations. The economic impacts of endeavours to reduce greenhouse gas emissions are then analysed in the light of more general debates about the relationship between the economy and the environment. Finally, the article discusses the risks, for organizations, of adopting a defensive or passive strategy, and explains the reasons why the implementation of a proactive strategy is necessary for most organization, especially large industrial emitters.

From Kyoto Protocol to Green Strategies

According to the protocol, the signatory countries must reduce their emissions of these gases by 5.2% on average by 2008-2012 as compared to their 1990 level. Nevertheless, the reduction objectives vary significantly from one country to the next. For example, Germany has committed itself to reducing GHG by 21% in comparison to 1990, whereas the objective for Great Britain is a 12.5% reduction, and one of 6% for Canada. Furthermore, developing countries, such as China and India, have no obligation with respect to the protocol. The absence of precise requirements for these developing countries, which represent an increasing proportion of global emissions of GHG, have fuelled opposition to and criticism of the Kyoto Protocol, especially in the United States .

This controversy about the Kyoto Protocol and its complexity explain the delays and numerous negotiations required to define the international measures that are to be applied . These measures, which were defined during the Bonn conference of 2001, are based on four principles :

- First, the implementation of an international greenhouse gas emissions trading scheme allowing signatory countries or GHG-emitting organizations to trade emission credits between themselves;
- Second, the taking into account of carbon sinks, namely using forests and cultivated lands to absorb carbon, remove it from the atmosphere and offset CO2 emissions;
- Third, the launch of a special climate-change fund intended to help the underdeveloped countries obtain clean technologies and control their GHG emissions;
- Finally, the implementation of a compliance system in charge of controlling the effective implementation of the Kyoto Protocol and reaching emission targets;

Though these four principles underlying the Kyoto Protocol's implementation will have an effect on organizations, in particular in signatory countries, the programs to reduce GHG depend mostly on local policies which can differ from one region to another. Indeed, governments have considerable room to manoeuvre in the implementation of public policies such as company quotas, regulations, subsidies and technology development in order to comply with the Kyoto agreement. Moreover, these environmental policies are not limited to the countries having ratified the protocol. In the United States for example, some cities and states such as New Hampshire, New Jersey, New York and California have made quite strict commitments to reduce their GHG . Paradoxically, according to a comparative study conducted by the Pembina Institute, most of the American states are more advanced in their programs to reduce GHG than the main provinces of Canada, a country which ratified the Kyoto Protocol .

Nevertheless, it is the European Union countries which are playing the leadership role in the battle against climate change . This leadership expresses itself by ambitious environmental objectives which represent, all in all, an 8% reduction in GHGs from their 1990 level, that is to say 2.8% more than the average of the signatory countries of the protocol. Furthermore, the European Parliament adopted a monitoring system in 2003 making it possible to better control the evolution in the emissions of the member countries based on their granted emission credits . Finally, since January 2005, a European greenhouse gas emissions trading scheme has been in effect .

This trading system is planned for the period 2005-2007, before the launching, in 2008, of a world-wide GHG market. Industrial and energy sectors are particularly concerned by this European carbon emission market. Thus, European Union countries have established emission-permit allocation plans for the following sectors: electricity production, iron and steel production, glass manufacturing, pulp and paper, oil refineries, cement factories, lime production, and brick and tile manufacturing. In addition, the scheme covers any installations that have combustion plants of a thermal input of over 20MW. Companies in these sectors have been attributed quotas and can now trade GHG permits depending on the compliance with their specific quotas .

The emergence and strengthening of international and local plans for GHG reduction requires organizations to take into account environmental issues that were until recently considered to be controversial scientific hypotheses. In some regions, the absence of a clear policy to reduce GHG makes this initiative more discretionary and uncertain. For example in February 2005, Canada did not yet have a precise plan to comply with Kyoto requirements. Indeed, the first proposals by the Canadian federal government, mainly based on a 15% reduction of GES emissions by large industrial emitters, have raised a strong opposition . Some provinces, especially Alberta, whose economy depends to a large extent on the petroleum industry, have opposed the Kyoto Protocol from the beginning. Many companies or industrial coalitions, especially in the petroleum and auto sectors, have joined the crusade against the protocol. This crusade is essentially based on economic concerns and on the alleged interests of some companies whose productivity and competitiveness would supposedly be seriously undermined by the costs of GHG reduction.

Nevertheless, these economic concerns have not won unanimous support and are rarely based on conclusive data. Indeed, studies of the impact of the Kyoto Protocol on competitiveness and of organizations' strategies remain relatively rare, essentially because of the very recent implementation of the protocol. In fact, most of the studies on this issue are based on a general macroeconomic viewpoint or on a prospective analysis of the possible consequences of global warming for business activities. Thus, in an article published in the Harvard Business Review, Packard and Reinhardt , after having explained what the greenhouse effect is and its global impact, emphasize the social responsibility of managers and the importance of assessing the risks and opportunities ensuing from ongoing climate change. The authors give various examples of the possible impacts of climate change on the insurance, automotive and petroleum industries, among others. Dunn analyses the economic impacts of the Kyoto Protocol and its positive effect on innovation. According to Hoffman , the economic and strategic impacts of climate change will depend mostly on capital asset management, the global competitiveness of countries, the anticipation of institutional changes stemming from the Kyoto Protocol, and market abilities to take advantage or not of the emergence of new opportunities related to climate change policies. Kolk and Pinkse point out that the effects of these changes on innovation may depend on the vertical and horizontal integration of organizations. They also depend on the decision of managers to change the products or processes at the origin of GHG emissions rather than buy greenhouse gas emission permits. As Levy and Kolk showed in their study of the petroleum industry, the GHG strategies of businesses are not independent of their governments' policies on this issue. Thus, the opposition between the United States and European Union over this issue is not neutral and would tend to lead to differentiated strategies depending on the origin of the companies.

Nevertheless, the impact of governmental or local policies is mitigated by the internationalization of firms, which can eventually outsource their activities to regions where environmental pressure is weaker, although such displacement seems to be relatively infrequent . Furthermore, the organizations' responses to global warming and the Kyoto Protocol does not only depend on external pressure. This response also depends on the analysis of costs and economic benefits ensuing from environmental initiatives. This cost-benefit analysis has been the object of many studies whose conclusions shed light on organizations' decisions to adopt a more or less proactive strategy with regard to climate change.

Controversial Economic Impacts

Studies conducted from an economic, financial or managerial viewpoint of the economic consequences of environmental initiatives have led to controversial results. Paradoxically, the political debates concerning the Kyoto Protocol and its economic impacts rarely refer to these works. GHG reduction is primarily considered to be a specific problem addressed through a somewhat ideological approach, entailing costs for some and benefits for others. These two apparently irreconcilable positions on the impact of the Kyoto Protocol reflect in reality the two mains approaches to the relation between the economy and the environment.

The first approach, which has for a long time dominated debates on this issue, is based on classic economics which considers environmental actions as a source of costs for businesses. In this perspective, managers must find a compromise between the costs of cleaning up pollution and the costs of negative externalities stemming from business activities . Environmental concerns and economic constraints are thus considered as irreconcilable, requiring a constant trade-off between these two conflicting dimensions. This win-loose hypothesis has been verified by various studies, mostly based on global statistical analysis. Thus, some studies have shown that the strengthening of environmental regulations and the ensuing investments tend to have negative impacts on organizations' productivity . According to Walley and Whitehead , most statements about the economic benefits expected from environmental initiatives are in fact unrealistic and may lead to costly choices that seriously undermine the productivity of organizations. This win-loose viewpoint underlies most of the criticism of the economic benefits of the Kyoto Protocol. Thus, in addition to some scientific uncertainties, the supposed costs of GHG reduction measures have been put forward by the American government to justify its refusal to ratify the protocol. Alarmist studies on this issue have predicted substantial losses in productivity, risks of recession, booming energy costs and a significant increase in unemployment . Other studies tend to temper these alarmist predictions. Thus, a study on the economic consequences of the Kyoto agreement based on theoretical predictive models shows that the costs ensuing from the protocol's implementation will in fact be very limited for signatory countries and do not represent a serious threat for companies . Nonetheless, these threats are taken very seriously by some organizations and business associations. In Canada for example, the Association of Petroleum Producers as well as the Manufacturers and Exporters Association have adopted positions very close to those of the American government. As trade with the United States represents more than 85% of Canadian exports, these business coalitions claim that the ratification of the Kyoto Protocol by Canada will lead to a significant loss of competitiveness affecting Canadian companies and the economy as a whole.

Nevertheless, this critical and defensive position does not represent that of all organizations. Indeed, the hypothesis of a conflicting relationship between the economy and the environment has been seriously questioned since the early 90s by many studies aimed at demonstrating the benefits ensuing from organizations' green initiatives. This win-win perspective is often called the Porter hypothesis, after the author who was one of the first to call into question the traditional postulate of the negative links between environmental initiatives and competitiveness . For Porter, an organizational response to environmental pressure entails innovative efforts to improve processes, to more efficiently use inputs and to find new outlets for production sub-products. In this view, the strengthening of regulation constraints, far from slowing down the organizations' competitiveness with respect to foreign competitors not subjected to the same norms, tends on the contrary to stimulate it. In the same vein, according to a study on the possible economic impacts of GHG reduction policy in the United States, the implementation of carbon taxes and a CO2 trading system to comply with the Kyoto Protocol should lead to improvements in competitiveness and employment . This win-win rationale has been illustrated by various empirical studies, which effectively show that environmental initiatives generally have a positive impact on organizations' productivity and competitiveness . Moreover, the acronyms of environmental management used in some multinational companies illustrate the savings that can be obtained through environmental programs, such as Pollution Prevention Pays (PPP) at 3M, Waste Reduction Always Pays (WRAP) at Dow Chemicals, and Save Money and Reduce Toxics (SMART) at Chevron.

This win-win rationale is reflected in the arguments of those who support the Kyoto Protocol. Thus, at the moment of the protocol's signing, in 1997, more than 2,000 economists, including some Nobel laureates, endorsed the conclusions of a report claiming that the economic benefits of GHG reduction initiatives outweigh their costs and that it is not unrealistic to meet the Kyoto Protocol objectives without undermining the American living standard . In this perspective, the ratification of the protocol is not only justified for environmental reasons. It also helps to stimulate the economy by encouraging organizations to modernize their processes, question their practices and acquire increasingly available environmental technologies . The European Union has sponsored studies which have shown the economic benefits that can arise from environmental policies such as GHG reduction . These benefits have also been stressed in a study which was conducted in more than 800 organizations and which showed that top environmental performers in terms of GHG tend to have a better productivity and a better financial performance than do their competitors . The governments of some countries such as Germany have made this win-win rational an official position in order to promote GHG reduction and justify the Kyoto Protocol in the eyes of organizations. Finally, some business coalitions have likewise declared themselves in favour of this protocol. This is notably the case with the World Business Council for Sustainable Development (WBCSD), a coalition of more than 1,000 managers of multinational companies such as Ford, BMW, Daimler-Chrysler, Hewlett-Packard, Coca-Cola, Chevron-Texaco, Fiat, Dow Chemical, Sony, Unilever, and Toyota. The search for synergies between the environment and the economy that is illustrated by the concept of eco-efficiency is moreover at the heart of the vocation of this very influential international business coalition.

Though the opposition between the win-win and win-loose approaches accurately reflects the current debate over the implications of the Kyoto Protocol for organizations, this dichotomy remains quite arbitrary, even simplistic. Indeed, the benefits or costs associated with GHG reduction depend on a myriad of factors which can vary significantly from one case to another, including the activity sector, distinctions between preventive and palliative actions, environmental objectives, etc. . Furthermore, the intensity of the external pressure and the implementation of a proactive strategy with respect to environmental issues can significantly modify the assessment of opportunities and threats ensuing from GHG reduction. For example, organizations which have used the environment to differentiate themselves from their competitors and to create competitive advantages can gain from the strengthening of ecological pressure, contrary to their more environmentally conservative competitors. Whatever the perceptions of the economic impacts of environmental initiatives, the implementation of the Kyoto Protocol requires that we reflect on how to respond to and deal with this issue, whose importance can be expected to rise in the years to come.

Promoting a Proactive Business Strategy

The main kinds of responses to global warming issues are not static or monolithic. Indeed, the newness and complexity of these issues are likely to have a fairly immediate impact on international pressures and policies. These changes may directly affect the strategies of organizations and the relevance of their responses to GHG emissions. For example, some organizations are reluctant to implement proactive measures in favour of the Kyoto Protocol in the absence of clear public policies. Indeed, some companies fear that early endeavours to cut GHG will not be fully recognized later on if they have to make more investments. This type of debate is fuelling the discussions between the Canadian government and some provinces such as Québec, which considers that the federal plan to comply with the Kyoto Protocol must take into account investments that have been made over the last few years, in particular by the aluminium industry. These uncertainties concerning the public policy on the Kyoto Protocol may thus foster a passive or defensive response and lead to a wait-and-see policy. However, this wait-and-see policy is based on a win-loose rationale which supposes that reducing GHG entails costs which should be avoided or delayed as long as possible in the absence of clearly defined external pressures. Moreover, this policy does not really take into account the competitive advantages that can stem from the introduction of more severe GHG emission regulations. Whatever the case may be, the implementation of these regulations and public policies for global warming casts doubt on the wait-and-see policy . In fact, everything leads us to believe that organizations, whatever their activity sector, will be increasingly led, voluntarily or not, to change their environmental policy and to be more committed to reducing GHG emissions. For many organizations, these commitments suppose changing from a defensive or passive to a more proactive or promoting response. This change to a proactive strategy based on a voluntary and significant commitment to cut GHG and to endorse the Kyoto Protocol is justified by three interdependent aspects: increasing institutional pressures, the impact on the competitive advantages of organizations, and the economic benefits ensuing from environmental initiatives.

First, organizations that adopt a passive or defensive response with respect to Kyoto by putting forward economic arguments are increasingly exposed to criticism and questions that can undermine their legitimacy and even their survival. These positions seem today to go against the trend of social expectations as well as the positions adopted by an increasing number of organizations. Indeed, climate warming and the Kyoto Protocol are no longer theoretical or hypothetical issues that are primarily of concern to environmentalists. The coming into force, especially in Europe, of measures such as quotas and the trading of GHG emission permits now affects many organizations, including those from non-ratifying countries which have subsidiaries established in regions that have ratified the Kyoto Protocol. Furthermore, the environmental policies of states can change rapidly. For example, Russia, which did not initially ratify the Kyoto Protocol, decided to do so in November 2004. These policies are expected to increase in scope and will no longer only be a concern for large industrial emitters. Indeed, an increasing number of experts consider that the Kyoto Protocol only represents a first step in the right direction but that much more remains to be done to limit the consequences of global warming . It is thus reasonable to expect an increase in environmental pressures on large and small GHG emitters, making defensive or passive responses less and less legitimate.

Second, adopting a proactive strategy tends to lead to a competitive advantage ensuing from such an approach. These advantages can stem from the emergence of environmental barriers that favour less polluting organizations. Such organizations are in a better position to comply with the increasing external pressure concerning global warming than are competitors who have adopted a more defensive or passive position and who find it more difficult to meet new environmental requirements. Furthermore, the adoption of a more proactive strategy helps companies to smoothly anticipate external pressures and to maintain some room to manoeuvre. These advantages are in keeping with the theory of the life cycle of social pressures, which shows that the autonomy of organizations tends to diminish as external pressures increase due to the fact that these organizations did not fully foresee social expectations . The life cycle of social pressures can partly explain why companies form coalitions that adopt voluntary measures to limit GHG emissions in order to better control or avoid the emergence of stricter regulations.

Third, a proactive approach can result in substantial economic benefits. These benefits not only stem from the win-win rationale inherent in some environmental initiatives. They also result from the consequences of public policies implemented as part of the Kyoto Protocol. Besides direct aids in the form of subsidies or tax credits which are being progressively implemented, the creation of a GHG emissions trading scheme may have a significant economic impact, especially for large industrial emitters. Indeed, this kind of market makes it possible to apply the polluter-pays principle. Thus, organizations exceeding their quotas will have to buy GHG emission permits on international markets to offset their poor environmental performances. Furthermore, organizations that have succeeded in reducing their emissions below the quotas will be able to sell such permits and to take advantage of this trading system. The adoption of a proactive strategy thus makes it possible, in the mid- to long-term, to benefit from this kind of trading independent of the economic gains or losses stemming directly from pollution reduction. This strategy may also limit some financial risks. First, environmental issues are increasingly used as a criteria to evaluate performances on financial markets and to assess an organization’s good governance . Second, banks and insurance companies are increasingly taking these issues into account.

These reasons in favour of adopting a proactive strategy should encourage organizations to see the Kyoto Protocol as an opportunity more than a cost. The type of decisions and plans needed to implement this strategy depends on the activity sector and specificities of each organization. Nevertheless, the approach to adopt is quite similar to strategic processes in general.

Conclusion

The debates on climate change have for a long time remained primarily focused on global environmental issues and on controversial scientific hypotheses concerning the possible impacts of human GHG emissions on global warming. Due to these controversies and the uncertainty surrounding the future of the Kyoto Protocol, organizations have hesitated to take the protocol into account, often seeing environmental pressures as a source of costs. These perceptions, which are shared by some politicians, explain to a large extent the refusal of some states to ratify the protocol. During the 90s, many studies suggested, contrary to the win-loose hypothesis, that environmental initiatives often lead to substantial economic advantages. Nevertheless, the economical and strategic impacts of organizations' efforts to reduce GHG remain relatively unexplored. With the unexpected Kyoto Protocol ratification by Russia and its recent entry into force, these impacts have became a major issue that cannot be overlooked, especially by large industrial emitters, who are confronted with increasing socio-political pressure. Organizations can face this pressure, which is expected to affect an increasing number of activity sectors, by adopting proactive responses.

Nevertheless, endeavours to reduce GHG emissions and to control climate change calls for large-scale modifications which do not solely entail opportunities for organizations. Many factors, such as the activity sector, technological innovation, the evolution of social pressures and public policies can significantly modify the assessment of the opportunities and threats seen in the Kyoto Protocol. Thus, as in any other major economic or political change, some organizations will come out as winners and others as losers in the struggle against global warming . If the consequences as well as the advantages of GHG reduction and a proactive strategy today seem difficult to foresee, this is because they depend to some extent on the qualities and skills of managers. Indeed, the ability of organizations to anticipate social pressures, to develop competitive advantages and to obtain direct or indirect gains from GHG reduction depend less on pre-established economic rules than on the clear-sightedness of managers and their decisions. In this context, environmental performance, especially in the control of GHGs, can be considered as an indicator of the quality of an organization's management. This hypothesis could explain the predominance of the win-win rationale in recent empirical studies on the economic impact of environmental initiatives . In this perspective, it is not only environmental initiatives which eventually contribute to improved economic performances, but more importantly, the excellence of managers and their decisions which lead to good economic and environmental performances. This viewpoint helps us to understand in a more positive and dynamic way the consequences of the Kyoto Protocol for organizations. GHG reduction is not only an ecological or ethical imperative. It is also an indicator of an organization's health and, more generally, of the savings achieved through this progress. By contributing to this progress, organizations are becoming part of the solution to global warming instead of only being part of the problem.

References

S. Dunn, Down to Business on Climate Change, Greener Management Internationl, 39, 27-41 (2002).

V. Houlder, Swiss Re changes the climate, Financial Times, April 27 (2004).

N. Walley and B. Whitehead, It's Not Easy Being Green, Harvard Business Review 72(3), 46-52 (1994) ; F. Cairncross, Costing the Earth, Harvard Business School Press, Boston (1992).
K. Packard and F. Reinhardt (Op Cit at Ref 1).

D. Black, M. Grubb and C Windham, International Trade and Climate Change Policies, The Royal Institute of International Affairs, London (2000) ; J. Shogren, The Benefits and Costs of the Kyoto Protocol, AEI Press, Washington (1999) ; A.J. Hoffman, Examining the Rhetoric: The Strategic Implications of Climate Change Policy, Corporate Environmental Strategy 9(4), 329-337 (2002).

S. Oberthür and H. E. Ott, The Kyoto Protocol. International Climate Policy for the 21st Century, Springer-Verlag, Berlin (1999).

M.H. Babiker, H.D. Jacoby, J.M. Reilly and D.M. Reiner, The evolution of a climate regime: Kyoto to Marrakech and beyond, Environmental Science and Policy 5(3), 195-206 (2002) ; E.D. Schulze, R. Valentini and M.J. Sanz, The long way from Kyoto to Marrakech: Implications of the Kyoto Protocol negotiations for global ecology, Global Change Biology 8(6), 505-518 (2002).

A.J. Hoffman, Winning the Greenhouse Gas Game, Harvard Business Review 82(4), 20-21 (2004).

Pembina Institute, A Comparison of Current Government Action on Climate Change in the U.S. and Canada, Pembina Institute and David Suzuki Foundation, Drayton (2002).

C. Vrolijk, COP-6 Collapse or 'to be Continued?, International Affairs 77(1), 163-170 (2001) ; S. Oberthür and H. E. Ott (Op Cit at Ref 7).

M. Peters, Emissions trading as a new dimension to European environmental law: the political agreement of the European Council on greenhouse gas allowance trading, European Environmental Law Review 12(3), 82-92 (2003).

M. Hopkin, Carbon Trading Grows Into New Year, Nature, January 7 (2005).

D. Stowell, Climate Trading: Development of Kyoto Protocol Markets, Palgrave Macmillan, Basingstoke (2005).

D. Bueckert, Corporate Canada dominates lobbying efforts on Kyoto implementation, Macleans, 16 février (2005).

K. Packard and F. Reinhardt (Op Cit at Ref 1).

S. Dunn (Op Cit at Ref 2).

A.J. Hoffman (Op Cit at Ref 6).

A. Kolk and J. Pinkse, Market Strategies for Climate Change, European Management Journal 22(3), 304-314 (2004).

D.L. Levy and A. Kolk, Strategic Response to Global Climate Change: Conflicting Pressures in the Oil Industry, Business and Politics 4(3), 275-300 (2002).

Organisation for Economic Cooperation and Development, Economic Globalisation and the Environment, OCDE, Paris (1997).

R. Lipsey, D. Purvis and M. Steiner, Microeconomics, Harper Collins, New York (1993).
F.M. Gollop and M.J. Roberts, Environmental Regulations and Productivity Growth: The Case of Fossil-Fueled Electric Power Generation, Journal of Political Economy 91(4), 654-674 (1983) ; G. Boyd and J.D. McCelland, The Impact of Environmental Constraints on

Productivity Improvement in Integrated Paper Plants, Journal of Environmental Economics and Management 38, 121 142 (1999) ; K. Palmer, W.E. Oates and P. Portney, Tightening Environmental Standards: The Benefit-Cost Paradigm, Journal of Economic Perspectives 9, 119-131 (1995).

N. Walley and B. Whitehead (Op Cit at Ref 4).

A.J. Hoffman (Op Cit at Ref 6) ; C.E. Coon, Why President Bush Is Right To Abandon The Kyoto Protocol?, The Heritage Foundation, 1437, May 11 (2001) ; M. Thorning, A U.S. Perspective on the Economic Impact of Climate Change Policy, Special Report of the American Council for Capital Formation, December (2000).

C. Böhringer and C. Vogt, Economic and Environmental Impacts of the Kyoto Protocol, Canadian Journal of Economics 36(2), 475-494 (2003).

M.E. Porter, The Competitive Advantage of Nations, Free Press, New York (1990) ; M. E Porter and C. Van Der Linde, Green and Competitive: Ending the Stalemate, Harvard Business Review 9(4), 120-134 (1995).

F. Krause, S.J. Decanio, J.A. Hoener and P. Baer, Cutting Carbon Emissions at a Profit (Part I): Opportunities for the U.S, Contemporary Economic Policy 20(4), 339-365 (2002) ; F. Krause, S.J. Decanio, J.A. Hoener and P. Baer, Cutting Carbon Emissions at a Profit (Part II): Impacts on U.S. Competitiveness and Jobs, Contemporary Economic Policy 21(1), 90-105 (2003).

P. Shrivastava, The Role of Corporations in Achieving Ecological Sustainability, Academy of Management Review 20(4), 936-960 (1995) ; M.A. Berry and D.A. Rondinelli, Proactive Corporate Environmental Management: A New Industrial Revolution, The Academy of Management Executive 12(2), 38-50 (1998) ; M. Russo and P. Fouts, A Resource-Based Perspective on Corporate Environmental Performance and Profitability, Academy of Management Journal 40(3), 534-559 (1997) ; G. Azzone and U. Bertèle, Exploring Green Strategies for Competitive Advantage, Long Range Planning 27(6), 69-81 (1994) ; N. Amara, N. Traoré, R. Landry and R. Romain, Technical Efficiency and farmers' Attitudes toward Technological Innovation: The Case of the Potato Farmers in Quebec, Canadian Journal of Agricultural Economics 47, 31-43 (1999).
A.J. Hoffman (Op Cit at Ref 6).

S. Dunn (Op Cit at Ref 2).
Commission of the European Communities, European Climate Change Programme Report, Commission of the European Communities, Brussels (2001) ; T. Barker and J. Köhler, Environmental Policy and Competitiveness, The European Union Research Network on Market-based Instruments for Sustainable Development, Brussels (1998).

M. Whittaker, Global Climate Change: Uncovering Hidden Investment Risk and Opportunity, The Geneva Papers on Risk and Insurance 25(4), 619-628 (2000).

M. Russo and P. Fouts (Op Cit at Ref 30) ; M.J. Roy, O. Boiral and D. Lagacé, Environmental commitment and manufacturing excellence: A comparative study within Canadian industry, Business Strategy and the Environment 10(5), 257-268 (2001) ; A.J. Hoffman (Op Cit at Ref 6).

A.J. Hoffman (Op Cit at Ref 10).
C. Böhringer and C. Vogt (Op Cit at Ref 27) ; J. Michaelson, Geoengineering: A climate change Manhattan Project, Stanford Environmental Law Journal, January (1998) (http://www.metatronics.net/lit/geo2.html#two)

R. W. Ackerman and R.A. Bauer, Corporate Social Responsiveness: The Modern Dilemma, Publishing Company, Reston (1976) ; O. Boiral and D. Jolly, Stratégie, Compétitivité et Écologie, Revue Française de Gestion 89, 80-95 (1992).

F.L. Schmidt and M. Orlitzky, Corporate Social and Financial Performance: A Meta-analysis, Organization Studies 24(3), 403-411 (2003) ; S.L. Hart, Beyond Greening: Strategies for a Sustainable World, Harvard Business Review 75(1), 66-76 (1997) ; R.D. Klassen and C.P. McLaughin, The impact of environmental management on firm performance, Management Science 42(8), 1199-1214 (1996).

A.J. Hoffman (Op Cit at Ref 6).
M.J. Roy, O. Boiral and D. Lagacé (Op Cit at Ref 35).

BUSINESS AND THE ENVIRONMENT – INTERPRETATION AND METHOD FOR APPLICATION OF PUBLIC INVOLVEMENT

Slavka SUFI-MIĆIĆ
Agency "BiOS trend Q" Business and environmental trend quality,
I. Mujezinovića 25/VI-21, 75000 Tuzla, BOSNIA AND HERZEGOVINA
sufi@inet.ba

Bosnia and Herzegovina is the country in transition and characterized with opposing elements of administrative and political constitution with international observation.

The process of the environmental transition flows slowly which is negatively reflected on the sector of entrepreneurship and development.

The application of the environmental acts, aligned with the European legislative, insists on the competent and responsible staffs that implement the method of evaluation about the influence on the environment and public involvement.

In order to achieve the quality implementation of the public involvement method and making decisions in sections considering the environment, it is also necessary to create the society that is environmentally motivated and responsible.

In the absence of these developing elements there is a concern that public involvement, instead of a democratic process, might become the obstruction of development.

Key words: *environment, environmental procedure, public involvement*

1. INTRODUCTION

Evaluation of impact that human activities have on health of people and on quality of environment, measures that are being taken to prevent and reduce adverse impacts, modes how it is being implemented by the authorised institutions, can be taken as indicators of a society's functionality.

Countries in transition are a good example for such an evaluation. For 10 years, the practice in Bosnia and Herzegovina has proven inefficiency of public sector institutions, which also has an impact on success of the environmental transition. One of the reasons lays in the fact that the administrative and political establishment of BiH is unique in the world by its complexity and lacking functionality.

Human Development Report – Millennium Development Goals – BiH 2003, contains recommendations for polities as to how to achieve those goals by 2015. One of eight development goals, given in the Report (MDGs) is related to *ensuring sustainability of environment.*

One of the possibilities for improving the democratisation process and raising the living quality is the role of the local community and NGOs profiled to support public's participation in decision making processes related to the environment.

2. SOME DATA ABOUT BOSNIA AND HERZEGOVINA

Bosnia and Herzegovina is located in the western part of the Balkan's Peninsula in the South-eastern Europe. Its area covers 51.209,2 km^2, with the 20 km exit on the Adriatic Sea. It borders with the Republic of Croatia on the north, west and south, with Serbia on east and with the Republic of Montenegro on south-east.

It gained its independence in 1992, after which the country was caught up in war until the end of 1995, when the Dayton Peace Agreement was signed, of which the Annex 4 makes the Constitution of Bosnia and Herzegovina. It is estimated that BiH has approximately 3,8 million inhabitants, with GDP/pc of 1,263 USD.

BIH is divided into two entities by the Dayton Peace Accord and the Constitution: Federation of Bosnia and Herzegovina (FBIH), Republika Srpska (RS) and the Brčko District. Federation has its own Constitution and it is administratively divided into 10 cantons, where each canton has its own government. Cantons are divided into municipalities. There are 84 municipalities in the Federation of BIH.

Republika Srpska has no cantons, it has its own Constitution and one government. It is administratively divided into 64 municipalities. Brčko District is a separate administrative unit consisted of the Brčko Town with its supervisor / representative of the international community.

Institutional establishment of the environmental sector, in accordance with the Dayton's Constitution, is within the authority of entities. Both entities have a Ministry of Environment, and in the Federation BIH each canton has its own Ministry of Environment. Authorities of the Federation and the cantons are not clearly defined, which frequently makes the procedure more difficult in practice.

3. ENVIRONMENTAL LEGISLATIVE AND ENVIRONMENTAL PRACTICE

3.1. Period until 1995.

While existing as a part of the Former Yugoslavia, Bosnia and Herzegovina had good laws in the sphere of environmental protection. Still, those laws were not applied in practice in a consistent manner. Due to that problems enlarged and they had a negative impact to several spheres, from polluting the basic living resources with danger for health of population, to weakening the economic power of the community.

During the war, between 1992 – 1995, industrial capacities with the so called "dirty technologies", were out of production, or have operated with minimum capacities. This has contributed to improvement of air quality and renewal of flora and fauna in many water currents, which were polluted until then.

Unfortunately, during the same period, land in Bosnia and Herzegovina has suffered different types of devastation and pollution. Today, BIH is the area with the largest number of mines and minefields in Europe, making about 10% of the BIH territory. Very difficult and long lasting consequences of mines and unexploded devices will be transferred to the years to come to all areas of social activities.

Significance in devastation of land has also been caused due to unplanned hewing down of forests and uncontrolled disposal of various waste. During the war, significant amounts of pharmaceutical waste have arrived to BIH as humanitarian assistance. There are no facilities for processing of such waste in BiH, which is a new environmental problem.

3.2. Environmental practice after the Dayton

.

Due to complex political situation and lack of will for environment related cooperation between the entities, not much was done in the period from 1995 to 1998. In order to overcome those problems, with the assistance from the Regional Environmental Centre for Central and Eastern Europe (REC), a joint Committee for Environment was established. The Commission was made of four members from each entity with the right to vote and several representatives of international organisations (OHR, USAID, the World Bank and the European Commission (Csagoly, 1998). cit. [2].

The Committee is responsible for: "harmonisation of environmental legislation and regulation, standards and action program, international treaties concerning the environmental, and their implementation; involvement in international processes such as Environment for Europe: cooperation with international organisation such as UNDP and the European Environmental Agency, and relations with the donor community; environmental monitoring and information systems and plans for emergency situations; physical planning concerning the environment, information collection and exchange; trans-boundary and inter-entity environmental issues, including cooperation with neighbouring countries on environmental matters; and coordination of all environmental activities incident to the admission of BIH as a Member State of the EU." (Csagoly, 1998). cit. [2].

Within the project of the European Commission titled Preparation of Environmental Laws and Policies in BiH, a set of five (5) environmental laws was prepared, of which all have been in power since 2002 in the Republika Srpska and since 2003 in the Federation of BiH.

Those are: Law on Environmental Protection, Law on Nature Protection, Law on Air Protection, Law on Waste Management and Law on Water Protection. The sixth is the Law on Fund for Environmental Protection, which has been prepared separately. Sub-legal acts were also brought to the Law on Environmental Protection and Law on Waste Management. Sub-legal acts for other laws are in the preparatory phase.

There has been a National Strategy for Management of Solid Waste for five years. Still, building of any of the 9 planned disposal sites in BiH has not been started. Strategy foresees that one disposal site accepts solid waste from several municipalities, with the total number of at least 200,000 citizens. Interests of different groups are difficult to align in practice. Generally, everyone is FOR disposal sites, but NOT in their municipality.

One of the most often and most serious problems during the implementation of procedure related to selection of sites for construction of a modern solid waste disposal sites, is violation of laws and exclusion of the public in the early phases of decision making. In current practice, the public is usually invited to accept already completed project documentation for a certain location, of which the local community had not been informed beforehand. Such practice slows down the overall process, makes it more difficult and greatly increases the cost of the project implementation.

3.3. Environmental procedure and the public's participation

Laws on Environmental Protection of both entities (FBIH and RS) contain a chapter treating PARTICIPATION OF THE PUBLIC AND ACCESS TO ENVIRONMENTAL INFORMATION (chapter VI. of the Law). In Article 33, the Law defines the procedure for Access to Environmental Information, while Article 36 prescribes Participation of the Public in Decision Making Processes Related to Specific Activities.
The given Article 36 says: "Authorised ministry will ensure participation of the public in the following:
- procedures related to evaluation of project's impact on environment;
- procedures for issuing of environmental permits for facilities and structures within its authority." (…) "After the initiation of administrative procedure, the public will be informed on the following:
- proposed activities of the applicant for issuing of the environmental permit;
- administrative bodies responsible to bring the decision, i.e. the environmental permit;
- development of the procedure, including the information on:
a) mode for participation of the public;
b) time and place of the foreseen public debate (…)
In practice, the procedure is often run by persons who have official authorities in the public administration, but who do not have necessary expertise and knowledge needed to manage the efficient public debate.

Consequence of a public debate run in such a manner and the whole procedure related to obtaining of environmental permit, is to formally comply with the legal obligations (Article 36), while in fact it all remains pretty much the same as it was before the Law on Environmental Protection was brought.

Characteristics of some public debates are the following:

1. Selective choice of participants in the public debate; lack of transparency and limited information of the local community and NGOs on the public debate by the applicant.
2. Non-principled leading of public debates by the representatives of local authority and the authorised ministries. For example:
   - Public debate on the project on establishment of new disposal site for cinder and ash from the power plant, located in the town, is being implemented as if this action would have no negative impact on the environment, because (according to the moderator's explanation) the system would be controlled by the applicant! It is about the area of cca 70 ha, with capacity of over 12 mil.m^3 of cinder and ash, previously mixed with water in relation 1:7 – 1:15 and transported hydraulically, which is a very complex environmental problem.

- On the other hand, a public debate and procedure run by the said body about the construction of quarries on another location, in uninhabited area (at 3,5 ha and 7-year exploitation) raises the discussion over issues that have no significant impact on environment. For example, emission of polluters of three engaged trucks or collection of waste waters for the same structure, while the topic is about dry exploitation of stone.

3. Unjustified refusal of a certain project during a public debate, but individuals and/or groups, which is frequently a consequence of poor preparation for project's promotion and animation of all interested parties.
4. Surely, public debates are used for conflicts between competitors and for elimination of competition in the sphere of exploitation and use of natural resources. This is easily done in a society that has no clear and documented environmental policy, has no strategy of environmental and economic development and has no consensus on accepting the responsibilities posed by the international community.

There are other examples which show the need for something to be significantly changed in this sphere in the quality sense, in order to achieve the goal – sustainability of environment and economic strengthening of the society. It is the need for shortening of the procedure related to environmental permit for facilities which are to start with the work. This procedure is currently taking 12 – 14 months.

3.3.1. Fundament for quality participation of the public

It has been seen in the current practice that the public is not sufficiently prepared for responsible and active participation in use of natural resources and creation of use of its environment. This role, *the one of the respected public opinion*, has come to BiH abruptly through the law, after the war devastation and degradation of industrial capacities, due to which thousands of workers were left unemployed and without funds for existence.

In such circumstances, the public is confused and distrusting towards activities seeking its participation. Citizens do not expect that their experience (through the participation of the public) could be accepted by the authority – the same authority which did nothing for the citizens to achieve their existential right – the right to work.

Intellectual structure of the BiH society is a silent public, a selected commitment by which positions gained without a transparent competition do not wish to be jeopardised.

The following is clear: Bosnia and Herzegovina is the transition process which, among other things, requires preparation of citizens for a more responsible relation towards rights and for responsibility of each individual for development of the local community and the whole society.

This is possible to achieve through a reformed education system, harmonised with the European one, through a continued, quality environmental education of citizens through media, with the aim to raise public awareness. Improvement in this sphere of development and social activity will be achieved with the next generation, brought up in the third millennium.

The role of NGOs profiled for activities in the area of environmental protection and living quality, is very important for development of awareness of local communities, but there are only a few of such organisations and larger efficiency is expected in that field, too.

4. SUMMARY

The process of complex, aftermath transition in Bosnia and Herzegovina is taking a very slow pace in all areas. Strategic development documents are still missing in the sphere of spatial planning, environmental policy, harmonised strategies of economic development; which has abrupt consequences in the field of exploiting of natural resources and preserving the environmental quality.

With the new legislative in the sphere of environment, there was also the obligation to inform the public and to have public's participation in the decision making processes related to activities in environment. It has been shown that citizens, representatives of public institutions and authorised ministries were not sufficiently prepared for this procedure.

In order for participation of the public in the decision making processes related to spatial development, sustainable living quality and protection of environment to become efficient, the traditional practice must be improved through modern environmental knowledge and skills.

Educational system must be modernised, the program must be harmonised with the European environmental education, and the environmental awareness of citizens must be continuously raised through the media. Contribution of NGOs in the process of public's participation must be larger and of a better quality, in order to comply in practice with the environmental requirements given in the Law on Environmental Protection and other acts.

5. References

[1] UNDP B&H: Human Development Report – 2003 – Millennium development Goals in B&H, Sarajevo, juni 2003.

[2] Grujić, Larisa:Environment in Bosnia and Hercegovina 2002, Civil Society Promotion Center, Sarajevo 2002.

[3] Sufi-Mićić, Slavka: Quality in Environment Protection in Bosnia and Herceg Prctice, 4-th Research/Expert Conference with International Participation QUALITY 2005, Sarajevo, November 2005.

[4] Environmental protection law FB&H, Sarajevo, 2003.

[5] Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Aarhus, 1998.

[6] A. Knežević, J. Čomić: Environmental lexicon Vol. 1, Sarajevo, 2001.

INDEX

A

B

C

Ç

D

E

F

G

H

I

İ

J

K

L

M

N

O

Ö

P

Q

R

S

Ş

T

U

Ü

V

W

Y

Z

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 350,000m^2 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

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

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 mileage stone 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.

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 4,5000m^2 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 8,500m^2 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.

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 Monastry. In Girne: Kyrenia Castle, Bellapais Abbey, St. Hilarion Castle and Buffavento Castle, and in Güzelyurt: Soli Ruins, St. Mamas Monastry 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 Corniacea, 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 rakı, 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 19ºC. The weather in winter is very mild with temperatures ranging between 9ºC-12ºC. Average annual rainfall is 500mm.

Emergency telephone numbers: Fire 199, Police 155, First Aid 112


International Conference on
Environment: Survival and Sustainability
19-24 February 2007 Nicosia-Northern Cyprus


19.02.2007


19.02.2007


1988
NEAR EAST UNIVERSITY
International Conference on
Environment:
Survival and
Sustainability
19-24 February 2007
Nicosia-Northern Cyprus
YAKIN DOĞU ÜNİVERSİTESİ
İLETİŞİM FAKÜLTESİ
KOMPLEKSİ

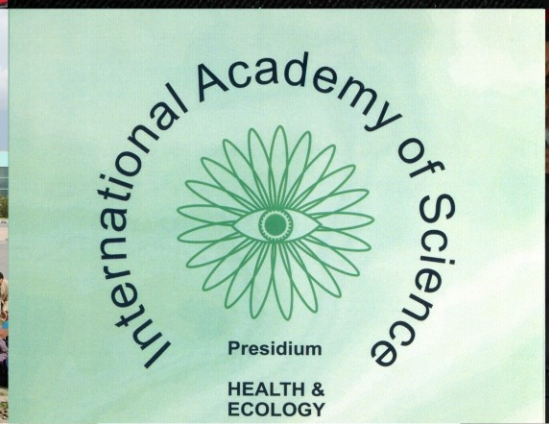

1988
NEAR EAST UNIVERSITY
International Conference on
Environment:
Survival and
Sustainability
19-24 February 2007
Nicosia-Northern Cyprus


19.02.2007


International Conference on
Environment: Survival and Sustainability
THANK YOU


NEAR EAST UNIVERSITY
International Conference on
Environment:
Survival and
Sustainability


INTERNATIONAL ACADEMY OF SCIENCE
HEALTH AND ECOLOGY


International Academy of Science
Presidium
HEALTH &
ECOLOGY

NEAR EAST UNIVERSITY

www.neu.edu.tr
Nicosia - TRNC

FOTOĞRAF: GÖRKEM BULUNÇ, MART 2009