TOURISM AND ENVIRONMENT (THM 317)

- **Some basic facts about tourism and the environment**

- 924 million international travelers in 2008, 62% leisure/vacation.
- US$ 856 billion international receipts/revenues (2007).

1990	456 m tourists	261 b dollarrs
2000	698	478
2004	760	662

- Average growth of 4.7% between 75 and 2000 - hotel rooms grew by 3%.
- Tourism is one of the five top export categories for 83% of countries, and the main one for 38% of them.
- Tourism employs 3% of the total global workforce (8% if indirect/informal jobs are included, or one in every 12 workers).
- In France, the world's number-one tourism destination, tourism accounts for over 7% of GDP.
- 33-50% of Internet-based transactions are tourism-related.

Some basic facts about tourism and the environment (cont)

- **BUT…**
- Globally, about 7% of total carbon emissions are attributed to air travel from tourism.
- In France, personal travel consumes about 5.3 million tons/equivalent petrol in energy per year, or 11% of total energy consumption in transportation, mainly because 80% of domestic tourist travel is by private automobile.
- In the US, tourism consumes 870 billion liters (230 billion gallons) of water per year, produces 317 million tons CO2 equivalent, and generates 11 million tons of suspended solids in sewage.
- Tourism pays 20% less than average employers in other areas, and 13-19 million children are employed in the industry.
- Increased ocean levels and disturbed weather patterns due to climate change will affect all major destinations in the world (Mediterranean, the Caribbean).
- Least developed countries contribute only 0.8% of tourism flows, and over 85% of tourism revenues are lost in leakages by the time they reach destinations in Africa.
- World Tourism Organization (WTO) is predicting over 1 500 million international arrivals by 2020, more than double the current level.

DEFINITION OF TOURISM AND TOURISTS

- Tourism: The activities of persons traveling to and staying in places outside of their usual environment for not more than one consecutive year for leisure, business and other purposes.
- Tourist: Any person who travels to a country other than his/her usual residence for a period not exceeding 12 months for purposes of entertainment, rest, culture, health care, and generally for reasons other than income-earning activities.

RELATIONSHIP BETWEEN TOURISM AND ENVIRONMENT

- Tourism is directly dependent on the quality of the natural and cultural environment. In other words, environment is the base of the economic development of tourism. Unfortunately, there is no existing form of tourism that is completely environmentally friendly. Tourism is a threat to environment. The growth of tourism will cause to unavoidable impacts on the environment, and in the same way the positive and negative changes in the environment will cause to great impacts on tourism development. The challenge is to find a way towards sustainable tourism development, which harmonises economic benefits with protection of natural diversity and cultural identity of the destination areas.

RELATIONSHIP BETWEEN TOURISM AND ENVIRONMENT (cont)

- The notion of environment in its broad and comprehensive sense is understood as the totality of all external conditions, both physical and human, in which organism, a person, a group of people, a society or humanity as a whole is living.
- There is a close relationship between tourism and environment which is recognized internationally. Three aspects of the tourism-environment relationship are fundamental:
- Many features of the physical environment are an attraction for tourists
- Tourist facilities and infrastructure constitute one aspect of the built environment
- Tourism development and tourist use of an area generate environmental impacts

SUSTAINABLE DEVELOPMENT

- International recognition that environment degradation was threatening not simply economic and social well-being, but life on earth, came about in 1972, when 133 nations gathered for the Stockholm Conference on the Environment and Development – the first global meeting on the environment. One important result was the establishment of UNEP, with the mandate to catalyze environmental protection and improvement across the world.
- United Nations created the World Commission on the Environment and Development (WCED), often referred to as the 'Brutland Commission' after its leader, the then Norwegian Prime Minister, Gro Harlem Brutland. The Commission's landmark report *Our Common Future* was published in 1987. It stated that while global economies had to meet human needs and aspirations, economic growth had to fit within the earth's finite physical limits. It called for 'a new era of environmentally-sound economic development' and declared, 'Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present generation, without compromising the ability of future generations to meet their own needs' – hence the introduction and definition of sustainable development.

SUSTAINABLE DEVELOPMENT 2

- In 1989, the United Nations began planning a conference on the environment and development to develop a methodology for sustainable development. Over the next two years, international negotiations commenced as never before. Thousands of experts from industry, business, government, non-government organizations, citizens' groups and academic disciplines developed policies and action plans. These discussions culminated in the United Nations Conference on Environment and Development (UNCED), the Earth Summit, held in Rio de Janeiro in June 1992.

SUSTAINABLE DEVELOPMENT 3

- The Earth Summit was unprecedented, not just because it was the biggest ever gathering of heads of state, United Nations agencies, industry, non-government organizations and citizens' groups, but also because it made it clear that economic development, social well-being and the environment could not continue to be considered as three separate areas. Focusing on achieving sustainable development, the Earth Summit produced the five agreements :
- Agenda 21: a global plan of action for sustainable development, containing over 100 programme areas, ranging from trade and environment, through agriculture and desertification to capacity building and technology transfer.
- The Rio Declaration on Environment and Development - a statement of 27 key principles to guide the integration of environment and development policies (including the polluter pays, prevention, precautionary and participation principles).
- The Statement of Principles on Forests - the first global consensus on the management, conservation and sustainable development of the world's forests.
- The Framework Convention on Climate Change - a legally-binding agreement to stabilise greenhouse gases in the atmosphere at levels that will not upset the global climate system.
- The Convention on Biological Diversity - a legally-binding agreement to conserve the world's genetic, species and ecosystem diversity and share the benefits of its use in a fair and equitable way.

Broad Implications for Sustainable Development

- Sustainable development, as defined by the Brutland Commission, is ‘development that meets the needs of the present generation, without compromising the ability of future generations to meet their own’. ***"Economic and social development that meets the needs of the current generation without undermining the ability of future generations to meet their own needs".***

Meeting the Goals of Sustainable Development

- A commitment to meet the needs of present and future generations has various implications. "Meeting the needs of the present" means satisfying:
- **Economic needs** - including access to an adequate livelihood or productive assets; also economic security when unemployed, ill, disabled or otherwise unable to secure a livelihood.
- **Social, cultural and health needs** - including a shelter which is healthy, safe, affordable and secure, within a neighbourhood with provision for piped water, drainage, transport, health care, education and child development, and protection from environmental hazards. Services must meet the specific needs of children and of adults responsible for children (mostly women). Achieving this implies a more equitable distribution of income between nations and, in most cases, within nations.
- **Political needs** - including freedom to participate in national and local politics and in decisions regarding management and development of one's home and neighbourhood, within a broader framework which ensures respect for civil and political rights and the implementation of environmental legislation.

Meeting the Goals of Sustainable Development 2

- Meeting such needs "without compromising the ability of future generations to meet their own needs" means:
- **Minimising use or waste of non-renewable resources** - including minimising the consumption of fossil fuels and substituting with renewable sources where feasible. Also, minimising the waste of scarce mineral resources (reduce use, re-use, recycle, reclaim).
- **Sustainable use of renewable resources** - including using freshwater, soils and forests in ways that ensure a natural rate of recharge.
- **Keeping within the absorptive capacity of local and global sinks for wastes** - including the capacity of rivers to break down biodegradable wastes as well as the capacity of global environmental systems, such as climate, to absorb greenhouse gases.

Renewable and non-renewable resources

- A **non-renewable resource** is a natural resource that cannot be produced, re-grown, regenerated, or reused on a scale which can sustain its consumption rate. These resources often exist in a fixed amount, or are consumed much faster than nature can recreate them. Fossil fuel (such as coal, petroleum and natural gas) and nuclear power are examples. In contrast, resources such as timber (when harvested sustainably) or metals (which can be recycled) are considered renewable resources [1].

Renewable and non-renewable resources

- A natural resource is a **renewable resource** if it is replaced by natural processes at a rate comparable or faster than its rate of consumption by humans. Solar radiation, tides, winds and hydroelectricity are *perpetual resources* that are in no danger of a lack of long-term availability. Renewable resources may also mean commodities such as wood, paper, and leather, if harvesting is performed in a sustainable manner.

What does Sustainable Development mean for Tourism and Hospitality?

- Sustainable development is about responsible entrepreneurship, product stewardship, long-term planning and 'doing more with less'. The environment is the tourism industry's key resource – eliminate a clean and healthy environment and you eliminate tourism. To be sustainable, tourism businesses need to reduce the use of resources and the output of waste and emissions through, and together with, a range of environmental management and monitoring activities.

What is Sustainable Tourism?

- Sustainable tourism can be defined as ‘tourism development and management that meets the needs of today’s tourists and tourism businesses without compromising the ability of future tourists and tourism businesses to enjoy and profit from the same destinations’. In other words, sustainable tourism is tourism that meets the needs of the present generation while maintaining and enhancing the beauty and integrity of destinations for future generations, through applying the principles of sustainable development.

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 1

- **The Precautionary Principle**

  Where there are threats of serious or irreversible damage, lack of full scientific certainty, shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 2

Environmental Integration

- Environmental integration focuses on the interdependence between economic growth and environment quality.
- In the case of the tourism industry, this principle is particularly significant because industry growth and expansion will not be possible if its key resource – the environment – is destroyed.

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 3

- Environment integration is multi-faceted in its application. With reference to environment management systems, it reminds us that pollution control in one medium (air, land or water), or in one activity, should not result in pollution increases in other mediums or activities. Let us consider some examples.

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 4

- Environmental integration also calls for limiting human and financial resources in seeking environment solutions. Take the example of a coastal area with a large concentration of beach resorts. Sewage from the hotels must be treated before discharge, to maintain the quality of the shallow bathing waters.

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 5

- This will be more environmentally and economically feasible if local authorities set up a collective wastewater treatment plant, rather than requiring each facility to construct its own on-site unit. Construction-related impacts will be reduced, and pre-discharge wastewater-level monitoring will be made easier. Maintenance costs of such a plant could be financed through discharge levies.

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 6

Prevention at Source

- 'Prevention is better than cure.' Environment improvement practices should be applied at the very outset, to prevent the generation of waste and pollution in the first place. The objective is to move away from end-of-pipe, clean-up approaches that deal with pollution after it has been created, by avoiding the generation of waste at source. Prevention at source also paves the way for reducing the material and energy intensity of processes and products/services.

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 7

- For example, if a hotel or restaurant starts using less water by installing flow-reducers in taps and water-saving fl ushers in toilets, it will also significantly reduce wastewater. This means less wastewater to treat, reducing risk to nearby waterways. Using less water also results in lower bills, while reduced wastewater output lowers effluent discharge costs.

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 8

The 'Polluter Pays' Principle

- This principle says that the costs of pollution abatement should be borne by the polluter. It has been widely accepted and applied in the development of environment policies on the use of 'economic instruments' for environment improvement, such as pollution taxes, user fees, and levies.

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 9

- An important question that arises from this is: Who is the polluter? People often suppose the polluters are manufacturers of goods and services, often forgetting that consumers are also polluters, since they demand and consume the products and services that generate the pollution. Governments are also polluters, either directly as producers and consumers, or indirectly by subsidizing polluting activities.

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 10

Public Participation

- The principle of public participation is concerned with the decision-making processes that involve all those most likely to be affected by a decision. It dictates that:
- **All groups of society should be able to have their say on matters of concern;**
- **Interest groups should be able to participate in discussions that precede decision-making;**
- **Relevant groups should be informed about the potential environment**
- **impacts of developments and the measures proposed to reduce them.**

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT 11

- One of the best examples of the application of public participation is in the formal Environmental Impact Assessment (EIA) process. Most countries require an EIA before major development projects are finalized and approved. The formal EIA process requires that EIA findings be compiled into a formal 'environmental impact statement' and made available for public consultation, allowing interested groups to be informed about the proposed development and to voice their concerns, suggest alternatives and consider impact mitigation methods before the plans are finalized.

Guiding principles for sustainable tourism 1

1. Using Resources Sustainably

   The conservation and sustainable use of resources-natural, social and cultural- is crucial and makes long term business sense

2 Reducing Overconsumption and Waste

   Reduction of over-consumption and waste avoids the cost of restoring long term environmental damage and contributes to the quality of tourism

3 Maintaining Diversity

   Maintaining and promoting natural, social and cultural diversity is essential for long term sustainable tourism and creates flexible base for the industry

4 Integration Tourism into Planning

   Tourism development which is integrated into a national and local strategic planning framework and which undertakes EIAs, increase the long term viability of tourism

Guiding principles for sustainable tourism 2

5 Supporting Local Economies

Tourism that supports a wide range of local economic activities and which takes environmental costs/values into account, both protects those economies and avoids environmental damage

6 Involving Local Communities

The full involvement of local communities into tourism sector not only benefits them and the environment in general but also improves the quality of tourism experience

7 Consulting Stakeholders and the Public

Consultation btwn the tourism industry and the local communities, organizations and institutions is essential if they are to work alongside each other and resolve potential conflicts of interest

8 Training Staff

Staff training which integrates sustainable tourism into work practices along with recruitment of local personnel at all levels, improves the quality of the tourism product

Guiding principles for sustainable tourism 3

9 Marketing Tourism Responsibly

Marketing that provides tourists with full and responsible information increases respect for the natural, social and cultural environments of destination areas and enhances customer satisfaction

10 Undertaking Research

Ongoing research and monitoring by the industry using effective data collection and analysis is essential in solving problems and bringing benefits to destinations, the industry and customers

FRAMEWORK FOR SUSTAINABLE TOURISM

1. Integration of Tourism into Overall Policy for Sustainable Development
2. Development of Sustainable Tourism
3. Management of Tourism
4. Conditions for Success

Integration of Tourism into Overall Policy for Sustainable Development

1 National Strategies

2 Interagency Coordination and Cooperation

3 Integrated Management

4 Reconciling Conflicting Resource Uses:

Integration of Tourism into Overall Policy for Sustainable Development 1

1 National Strategies

- Establish a national tourism strategy that is updated periodically and a master plan for tourism development and management.
- Integrate conservation of environmental and biodiversity resources into all such strategies and plans.
- Enhance prospects for economic development and employment while maintaining protection of the environment.
- Provide support through policy development and commitment to promote sustainability in tourism and related activities.

Integration of Tourism into Overall Policy for Sustainable Development 2

2 Interagency Coordination and Cooperation

- Strengthen the coordination of tourism policy, planning development and management at both national and local levels.
- Strengthen the role of local authorities in the management and control of tourism, including providing capacity development for this.
- Ensure that all stakeholders, including government agencies and local planning authorities, are involved in the development and implementation of tourism.
- Maintain a balance with other economic activities and natural resource uses in the area, and take into account all environmental costs and benefits

Integration of Tourism into Overall Policy for Sustainable Development 3

3 Integrated Management:

- Maximise economic, social and environmental benefits from tourism and minimise its adverse effects, through effective coordination and management of development
- Adopt integrated management approaches that cover all economic activities in an area, including tourism.
- Use integrated management approaches to carry out restoration programmes effectively in areas that have been damaged or degraded by past activities.

Integration of Tourism into Overall Policy for Sustainable Development 4

4 Reconciling Conflicting Resource Uses:

- Enable different stakeholders in the tourism industry and local communities, organisations and institutions to work alongside each other
- Focus on ways in which different interests can complement each other within a balanced programme for sustainable development.

Development of Sustainable Tourism

1 Planning for Development & Land-use at sub-National Level

2 Environmental Impact Assessment (EIA):

3 Planning Measures

4 Legislative Framework

5 Environmental Standards

Development of Sustainable Tourism 1

- 1 Planning for Development & Land-use at sub-National Level :
- Incorporate tourism planning with planning for all sectors and development objectives to ensure that the needs of all areas are addressed. (Tourism planning should not be undertaken in isolation.)
- Ensure that plans create and share employment opportunities with local communities.
- Ensure that plans contain a set of development guidelines for the sustainable use of natural resources and land.
- Prevent *ad hoc* or speculative developments.
- Promote development of a diverse tourism base that is well-integrated with other local economic activities.
- Protect important habitats and conserve biodiversity in accordance with the Convention on Biological Diversity.

Development of Sustainable Tourism 2

- 2 Environmental Impact Assessment (EIA):
- Examine impacts at the regional national and local levels.
- Adopt or amend legislation to ensure that EIAs and the planning process take account of regional factors, if necessary.
- Ensure that project proposals respond to regional development plans and guidelines for sustainable development.

Development of Sustainable Tourism 3

- 3 Planning Measures
- Introduce measures to control and monitor tour operators, tourism facilities, and tourists in any area.
- Apply economic instruments, such as user fees or bonds.
- Zone of land and marine as an appropriate mechanism to influence the siting and type of tourism development by confining development to specified areas where environmental impact would be minimised.
- Adopt planning measures to reduce emissions of CO2 and other greenhouse gases, reduce pollution and the generation of wastes, and promote sound waste management.
- Introduce new or amended planning or related legislation where necessary.

Development of Sustainable Tourism 4

- 4 Legislative Framework:

- Strengthen institutional frameworks for enforcement of legislation to improve their effectiveness where necessary.
- Standardise legislation and simplify regulations and regulatory structures to improve clarity and remove inconsistencies.
- Strengthen regulations for coastal zone management and the creation of protected areas, both marine and land-based, and their enforcement, as appropriate.
- Provide a flexible legal framework for tourism destinations to develop their own set of rules and regulations applicable within their boundaries to suit the specific circumstances of their local economic, social and environmental situations, while maintaining consistency with overall national and regional objectives and minimum standards.
- Promote a better understanding between stakeholders of their differentiated roles and their shared responsibility to make tourism sustainable.

Development of Sustainable Tourism 5

- 5 Environmental Standards
- **Protect the environment by setting clear ambient environmental quality standards**
- Minimise pollution at source, for example, by waste minimisation, recycling, and appropriate effluent treatment.
- Take into account the need to reduce emissions of CO2 and other greenhouse gases resulting from travel and the tourism industry.

Management of Tourism

- 1 Initiatives by Industry
- 2 Monitoring
- 3 Technology
- 4 Compliance Mechanisms

Management of Tourism 1

- 1 Initiatives by Industry
- Structure initiatives to give all stakeholders a share in the ownership, to maximise their effectiveness.
- Establish clear responsibilities, boundaries and timetables for the success of any initiative.
- As well as global initiatives, encourage small and medium-sized enterprises to also develop and promote their own initiatives for sustainable tourism at a more local level
- Consider integrating initiatives for small and medium-sized enterprises within overall business support packages, including access to financing, training and marketing, alongside measures to improve sustainability as well as the quality and diversity of their tourism products.
- Market tourism in a manner consistent with sustainable development of tourism.

Management of Tourism 2

- 2 Monitoring
- **Ensure consistent monitoring and review of tourism activities to detect problems at an early stage**
- Establish indicators for measuring the overall progress of tourist areas towards sustainable development.
- Establish institutional and staff capacity for monitoring.
- Monitor the implementation of environmental protection and related measures set out in EIAs, and their effectiveness, taking into account the effectiveness of any ongoing management requirements for the effective operation and maintenance of those measures for protection of areas where tourism activities take place.

Management of Tourism 3

- 3 Technology
- **Minimise resource use and the generation of pollution and wastes by using and promoting environmentally-sound technologies (ESTs)**
- Develop and implement international agreements which include provisions to assist in the transfer of Environmentally Sound Technologies (ESTs) for the tourism sector, such as the Clean Development Mechanism of the Kyoto Protocol for energy-related issues.
- Promote introduction and more widespread use of ESTs by tourism enterprises and public authorities dealing with tourism or related infrastructures, as appropriate, including the use of renewable energy and ESTs for sanitation, water supply, and minimisation of the production of wastes generated by tourism facilities and those brought to port by cruise ships

Management of Tourism 4

- 4 Compliance Mechanisms
- **Ensure compliance with development plans, planning conditions, standards and targets for sustainable tourism by providing incentives, monitoring compliance, and enforcement activities where necessary.**
- **Provide sufficient resources for maintaining compliance, including increasing the number of trained staff able to undertake enforcement activities as part of their duties.**
- **Monitor environmental conditions and compliance with legislation, regulations, and consent conditions**
- **Use compliance mechanisms and structured monitoring to help detect problems at an early stage, enabling action to be taken to prevent the possibility of more serious damage.**
- **Take into account compliance and reporting requirements set out in relevant international agreements.**
- **Use incentives to encourage good practice, where appropriate**

Conditions for Success

- **1 Involvement of Stakeholders**
- **2 Information Exchange**
- **3 Capacity Building**

Conditions for Success 1

- **1 Involvement of Stakeholders**
- **Increase the long-term success of tourism projects by involving all primary stakeholders, including the local community, the tourism industry, and the government, in the development and implementation of tourism plans.**
- Involve all primary stakeholders in the development and implementation of tourism plans, in order to enhance their success. (Projects are most successful where all main stakeholders are involved.)
- Encourage development of partnerships with primary stakeholders to give them ownership shares in projects and a shared responsibility for success
- sustainable tourism development and management, including information on planning, standards, legislation and enforcement, and of experience gained in implementation of these Principles.

Conditions for Success 2

- **2 Information Exchange**
- **Raise awareness of sustainable tourism and its implementation by promoting exchange of information between governments and all stakeholders, on best practice for sustainable tourism, and establishment of networks for dialogue on implementation of these Principles ; and promote broad understanding are awareness to strengthen attitudes, values and actions that are compatible with sustainable development**

Conditions for Success 3

- **3 Capacity Building**
- **Ensure effective implementation of sustainable tourism, and these Principles, through capacity building programmes**
- Develop and strengthen their human resources and institutional capacities to facilitate the effective implementation of these Principles.
- Transfer know-how and provide training in areas related to sustainability in tourism
- Encourage contributions to capacity-building from the local, national, regional and international levels by countries, international organisations, the private sector and tourism industry, and NGOs

Examples of Good Practice 1

***In Bermuda**, a country that benefits greatly from tourism,*

- *legislation restricts residents to the ownership of one car,*
- *prohibits rental cars and neon signs,*
- *provides for the protection of whales, dolphins, turtles and coral,*
- *imposes heavy fines for reef damage,*
- *limits the number of ships that dock in the harbour,*
- *compels visitors to stay on designated trails in national parks,*
- *and requires that new developments follow traditional architectural designs and are no higher than two floors.*

Examples of Good Practice 2

Ruins of a Mayan city *were discovered during the restoration of Tekax, a group of villages in Yucatan, Mexico, after a hurricane in 1998.*

With assistance from government authorities and the tourist board,

- *the local people excavated the site,*
- *designated zones of archaeological significance that needed extra protection,*

Examples of Good Practice 3

- *developed a local education programme on the importance of preserving the site,*
- *improved water availability, and*
- *set up a small hotel designed on traditional architectural principles.*

Tourists began arriving and the revenues generated remained with the people of Tekax

IMPACTS OF TOURISM

- Environmental Impacts of Tourism
- Socio-cultural Impacts of Tourism

ENVIRONMENTAL IMPACTS OF TOURISM 1

- The quality of the environment, both natural and man-made, is essential to tourism.
- tourism's relationship with the environment is complex. It involves many activities that can have adverse environmental effects.
- Many of these impacts are linked with the construction of general infrastructure such as roads and airports, and of tourism facilities, including resorts, hotels, restaurants, shops, golf courses and marinas.
- The negative impacts of tourism development can gradually destroy the environmental resources on which it depends.

ENVIRONMENTAL IMPACTS OF TOURISM 2

- On the other hand, tourism has the potential to create beneficial effects on the environment by contributing to environmental protection and conservation.
- It is a way to raise awareness of environmental values and it can serve as a tool to finance protection of natural areas and increase their economic importance

ENVIRONMENTAL IMPACTS OF TOURISM 3

Negative impacts from tourism occur when

- the level of visitor use is greater than the environment's ability to cope with this use within the acceptable limits of change.
- Uncontrolled conventional tourism poses potential threats to many natural areas around the world. It can put enormous pressure on an area and lead to impacts such as
- soil erosion,
- increased pollution,
- discharges into the sea,

ENVIRONMENTAL IMPACTS OF TOURISM 4

- natural habitat loss,
- increased pressure on endangered species and
- heightened vulnerability to forest fires.
- It often puts a strain on water resources, and it can force local populations to compete for the use of critical resources.

ENVIRONMENTAL IMPACTS OF TOURISM 5

1 Three Main Impact Areas:

- Depletion of Natural Resources
- Pollution
- Physical Impacts

2 Environmental Impacts at the Global Level

3 Other Industry Impacts on Tourism

4 How Tourism can Contribute to Environmental Conservation

DEPLETION OF NATURAL RESOURCES 1

Tourism development can put pressure on natural resources when it increases consumption in areas where resources are already scarce.

Water resources

- Water, and especially fresh water, is one of the most critical natural resources.
- The tourism industry generally overuses water resources for hotels,
- swimming pools,
- golf courses and
- personal use of water by tourists.
- This can result in water shortages and degradation of water supplies,
- as well as generating a greater volume of waste water

DEPLETION OF NATURAL RESOURCES 2

In dryer regions like the Mediterranean, the issue of water scarcity is of particular concern.

- Because of the hot climate and the tendency of tourists to consume more water when on holiday than they do at home, the amount used can run up to **440 liters a day**.
- This is almost double what the inhabitants of an average Spanish city use.

DEPLETION OF NATURAL RESOURCES 3

- Golf course maintenance can also deplete fresh water resources. In recent years golf tourism has increased in popularity and the number of golf courses has grown rapidly.
- Golf courses require an enormous amount of water every day and, as with other causes of excessive extraction of water, this can result in water scarcity.
- If the water comes from wells, over pumping can cause saline intrusion into groundwater.
- Golf resorts are more and more often situated in or near protected areas or areas where resources are limited, exacerbating their impacts

DEPLETION OF NATURAL RESOURCES 4

An average golf course in a tropical country such as Thailand needs

- 1500kg of chemical fertilizers, pesticides and herbicides per year and
- uses as much water as 60,000 rural villagers.

Source: Tourism Concern

DEPLETION OF NATURAL RESOURCES 5

Local resources

- Tourism can create great pressure on local resources like
- energy,
- food, and
- other raw materials that may already be in short supply.
- Greater extraction and transport of these resources exacerbates the physical impacts associated with their exploitation.

DEPLETION OF NATURAL RESOURCES 6

- Because of the seasonal character of the industry, many destinations have ten times more inhabitants in the high season as in the low season.
- A high demand is placed upon these resources to meet the high expectations tourists often have (proper heating, hot water, etc.).

DEPLETION OF NATURAL RESOURCES 7

Land degradation

Important land resources include

- minerals,
- fossil fuels,
- fertile soil,
- forests,
- wetland and
- wildlife.

DEPLETION OF NATURAL RESOURCES 8

Increased construction of tourism and recreational facilities

- has increased the pressure on these resources and on scenic landscapes.
- Direct impact on natural resources, both renewable and nonrenewable,
- caused by the use of land for accommodation and other infrastructure provision, and the use of building materials.
- Forests often suffer negative impacts of tourism in the form of deforestation caused by fuel wood collection and land clearing.
- For example, one trekking tourist in Nepal - and area already suffering the effects of deforestation - can use four to five kilograms of wood a day

POLLUTION 1

Tourism can cause the same forms of pollution as any other industry: air emissions, noise, solid waste and littering, releases of sewage, oil and chemicals, even architectural/visual pollution.

Air pollution and noise

- Transport by air, road, and rail is continuously increasing in response to the rising number of tourists and their greater mobility. To give an indication, the ICAO reported that the number of international air passengers worldwide rose from 88 million in 1972 to 344 million in 1994. One consequence of this increase in air transport is that tourism now accounts for more than 60% of air travel and is therefore responsible for an important share of air emissions. One study estimated that a single transatlantic return flight emits almost half the CO2 emissions produced by all other sources (lighting, heating, car use, etc.) consumed by an average person yearly.

POLLUTION 2

- Transport emissions and emissions from energy production and use are linked to acid rain, global warming and photochemical pollution. Air pollution from tourist transportation has impacts on the global level, especially from carbon dioxide (CO2) emissions related to transportation energy use. And it can contribute to severe local air pollution.

POLLUTION 3

- Some of these impacts are quite specific to tourist activities. For example, especially in very hot or cold countries, tour buses often leave their motors running for hours while the tourists go out for an excursion because they want to return to a comfortably air-conditioned bus.

POLLUTION 4

- Noise pollution from
- airplanes,
- cars, and
- buses, as well as
- recreational vehicles such as snowmobiles and jet skis, is an ever-growing problem of modern life.
- In addition to causing annoyance, stress, and even hearing loss for it humans, it causes distress to wildlife, especially in sensitive areas. For instance, noise generated by snowmobiles can cause animals to alter their natural activity patterns

POLLUTION 5

- **Solid waste and littering**
- In areas with high concentrations of tourist activities and appealing natural attractions, waste disposal is a serious problem and improper disposal can be a major despoiler of the natural environment - rivers, scenic areas, and roadsides. For example, cruise ships in the Caribbean are estimated to produce more than 70,000 tons of waste each year. Today some cruise lines are actively working to reduce waste-related impacts.

POLLUTION 6

- Solid waste and littering can degrade the physical appearance of the water and shoreline and cause the death of marine animals.
- In mountain areas, trekking tourists generate a great deal of waste. Tourists on expedition leave behind their garbage, oxygen cylinders and even camping equipment.
- Such practices degrade the environment with all the detritus typical of the developed world, in remote areas that have few garbage collection or disposal facilities. Some trails in the Peruvian Andes and in Nepal frequently visited by tourists have been nicknamed "Coca-Cola trail" and "Toilet paper trail".

POLLUTION 7

POLLUTION 8

POLLUTION 9

Sewage

- Construction of hotels, recreation and other facilities often leads to increased sewage pollution. Wastewater has polluted seas and lakes surrounding tourist attractions, damaging the flora and fauna.
- Sewage runoff causes serious damage to coral reefs because it stimulates the growth of algae, which cover the filter-feeding corals, hindering their ability to survive.

POLLUTION 10

Aesthetic Pollution

- A lack of land-use planning and building regulations in many destinations has facilitated sprawling developments along coastlines, valleys and scenic routes. The sprawl includes tourism facilities themselves and supporting infrastructure such as roads, employee housing, parking, service areas, and waste disposal.

PHYSICAL IMPACTS 1

Attractive landscape sites, such as

- sandy beaches,
- lakes, riversides, and
- mountain tops and slopes,
- are often transitional zones, characterized by species-rich ecosystems. Typical physical impacts include the degradation of such ecosystems.
- An ecosystem is a geographic area including
- all the living organisms (people, plants, animals, and microorganisms),
- their physical surroundings (such as soil, water, and air), and
- the natural cycles that sustain them.

PHYSICAL IMPACTS 2

- The ecosystems most threatened with degradation are ecologically fragile areas such as
- alpine regions,
- rain forests,
- wetlands,
- mangroves,
- coral reefs and
- sea grass beds.
- The threats to and pressures on these ecosystems are often severe because such places are very attractive to both tourists and developers.

PHYSICAL IMPACTS 3

Physical impacts of tourism development

- **Construction activities and infrastructure development**

  The development of tourism facilities such as accommodation, water supplies, restaurants and recreation facilities can involve sand mining, beach and sand dune erosion, soil erosion and extensive paving. In addition, road and airport construction can lead to land degradation and loss of wildlife habitats and deterioration of scenery.

PHYSICAL IMPACTS 4

- **Deforestation and intensified or unsustainable use of land**

  Construction of ski resort accommodation and facilities frequently requires clearing forested land. Coastal wetlands are often drained and filled due to lack of more suitable sites for construction of tourism facilities and infrastructure. These activities can cause severe disturbance and erosion of the local ecosystem, even destruction in the long term.

PHYSICAL IMPACTS 5

Marina development

- Development of marinas and breakwaters can cause changes in currents and coastlines.
- Furthermore, extraction of building materials such as sand affects coral reefs, mangroves, and hinterland forests, leading to erosion and destruction of habitats.
- In the Philippines and the Maldives, dynamiting and mining of coral for resort building materials has damaged fragile coral reefs and depleted the fisheries that sustain local people and attract tourists.

PHYSICAL IMPACTS 6

- Overbuilding and extensive paving of shorelines can result in destruction of habitats and disruption of land-sea connections (such as sea-turtle nesting spots).
- Coral reefs are especially fragile marine ecosystems and are suffering worldwide from reef-based tourism developments. Evidence suggests a variety of impacts to coral result from shoreline development, increased sediments in the water, trampling by tourists and divers, ship groundings, pollution from sewage, over-fishing, and fishing with poisons and explosives that destroy coral habitat.

PHYSICAL IMPACTS 7

Physical impacts from tourist activities

- **Trampling** Tourists using the same trail over and over again trample the vegetation and soil, eventually causing damage that can lead to loss of biodiversity and other impacts. Such damage can be even more extensive when visitors frequently stray off established trails.

PHYSICAL IMPACTS 8

Trampling impacts on vegetation

- Breakage and bruising of stems
- Reduced plant vigor
- Reduced regeneration
- Loss of ground cover
- Change in species composition

Trampling impacts on soil

- Loss of organic matter
- Reduction in soil macro porosity
- Decrease in air and water permeability
- Increase in run off
- Accelerated erosion

PHYSICAL IMPACTS 9

- **Anchoring and other marine activities** In marine areas (around coastal waters, reefs, beach and shoreline, offshore waters, uplands and lagoons) many tourist activities occur in or around fragile ecosystems. Anchoring, snorkeling, sport fishing and scuba diving, yachting, and cruising are some of the activities that can cause direct degradation of marine ecosystems such as coral reefs, and subsequent impacts on coastal protection and fisheries.
-

PHYSICAL IMPACTS 10

- *There are 109 countries with coral reefs. In 90 of them reefs are being damaged by cruise ship anchors and sewage, by tourists breaking off chunks of coral, and by commercial harvesting for sale to tourists. One study of a cruise ship anchor dropped in a coral reef for one day found an area about half the size of a football field completely destroyed, and half again as much covered by rubble that died later. It was estimated that coral recovery would take fifty years.*

  Source: Ocean Planet

PHYSICAL IMPACTS 11

Alteration of ecosystems by tourist activities

Habitat can be degraded by tourism leisure activities. For example,

- wildlife viewing can bring about stress for the animals and alter their natural behavior when tourists come too close.
- Safaris and wildlife watching activities have a degrading effect on habitat as they often are accompanied by the noise and commotion created by tourists as they chase wild animals in their trucks and aircraft.
- This puts high pressure on animal habits and behaviors and tends to bring about behavioral changes. In some cases, as in Kenya, it has led to animals becoming so disturbed that at times they neglect their young or fail to mate.

ENVIRONMENTAL IMPACTS OF TOURISM AT THE GLOBAL LEVEL

- LOSS OF BIOLOGICAL DIVERSITY
- DEPLETION OF THE OZONE LAYER
- CLIMATE CHANGE

LOSS OF BIOLOGICAL DIVERSITY 1

Biological diversity is the term given to the variety of life on Earth and the natural patterns it forms.

The effects of loss of biodiversity:

- It threatens our food supplies,
- opportunities for recreation and tourism, and
- sources of wood, medicines and energy.
- It interferes with essential ecological functions such as species balance, soil formation, and greenhouse gas absorption.

LOSS OF BIOLOGICAL DIVERSITY 2

- It reduces the productivity of ecosystems, thereby shrinking nature's basket of goods and services, from which we constantly draw.
- It destabilizes ecosystems and weakens their ability to deal with natural disasters such as
- floods,
- droughts, and
- hurricanes, and
- with human-caused stresses, such as pollution and climate change.

LOSS OF BIOLOGICAL DIVERSITY 3

- Tourism, especially nature tourism, is closely linked to biodiversity and the attractions created by a rich and varied environment.
- It can also cause loss of biodiversity when
- land and resources are strained by excessive use, and
- when impacts on vegetation, wildlife, mountain, marine and coastal environments and water resources

  exceed the carrying capacity.
- This loss of biodiversity in fact means loss of tourism potential.

LOSS OF BIOLOGICAL DIVERSITY 4

- **Introduction of exotic species**
  Tourists and suppliers - often unwittingly - can bring in species
- (insects, wild and cultivated plants and diseases)
- that are not native to the local environment and that can cause

  enormous disruption and even

  destruction of ecosystems.

DEPLETION OF THE OZONE LAYER 1

The ozone layer, which is situated in the

- upper atmosphere
  (or stratosphere)
- at an altitude of 12-50 kilometers,
- protects life on earth by
- absorbing the harmful wavelengths of the sun's ultraviolet (UV) radiation,

DEPLETION OF THE OZONE LAYER 2

- which in high doses is dangerous to humans and animals.
- For instance, one of the reasons scientists have put forward for the global decrease of amphibian populations is increased exposure to UV radiation.

DEPLETION OF THE OZONE LAYER 3

Ozone depleting substances (ODSs) such as

- CFCs (chlorofluorocarbon) and
- halons
- have contributed to the destruction of this layer.

The tourism industry may be part of the problem;

- direct impacts start with the construction of new developments and
- Refrigerators, air conditioners and propellants in aerosol spray cans, amongst others,

  contain ODSs and are widely used in the hotel and tourism industry
- Emissions from jet aircraft are also a significant source of ODSs. According to Tourism Concern, scientists predict that by 2015 half of the annual destruction of the ozone layer will be caused by air travel

GLOBAL WARMING AND CLIMATE CHANGE 1

Climate scientists now generally agree that

- the Earth's surface temperatures have risen steadily in recent years because of an increase in the so-called greenhouse gases in the atmosphere,

- which trap heat from the sun.
- One of the most significant of these gases is carbon dioxide (CO2),
- which is generated when fossil fuels,
- such as coal, oil and natural gas are burned (e.g. in industry, electricity generation, and automobiles) and when there are changes in land use, such as deforestation.
- In the long run, the accumulation of CO2 and other greenhouse gases (green house effect) in the atmosphere can cause global warming and global climate change - a process that may already be occurring.

GLOBAL WARMING AND CLIMATE CHANGE 2

Global tourism is closely linked to climate change.

- Tourism involves the movement of people from their homes to other destinations and accounts for about 50% of traffic movements;
- rapidly expanding air traffic contributes about 2.5% of the production of CO2.
- Tourism is thus a significant contributor to the increasing concentrations of greenhouse gases in the atmosphere. (Source: Mountain Forum)
- Air travel itself is a major contributor to the greenhouse effect. Passenger jets are the fastest growing source of greenhouse gas emissions. The number of international travelers is expected to increase from 594 million in 1996 to 1.6 billion by 2020, adding greatly to the problem unless steps are taken to reduce emissions. (Source: WWF)

GLOBAL WARMING AND CLIMATE CHANGE 3

- The greatest concern about global warming is that it is causing climate change.
- Computer models predict that the heating of the earth's atmosphere will alter atmospheric and oceanic temperatures as well as air circulation and weather patterns. This could result in:

GLOBAL WARMING AND CLIMATE CHANGE 4

- ALTERED RAINFALL PATTERNS
- SHIFT IN CLIMATE ZONES
- INCREASE IN THE FREQUENCY AND INTENSITY OF STORMS
- RISING SEA LEVELS

GLOBAL WARMING AND CLIMATE CHANGE 5

ALTERED RAINFALL PATTERNS

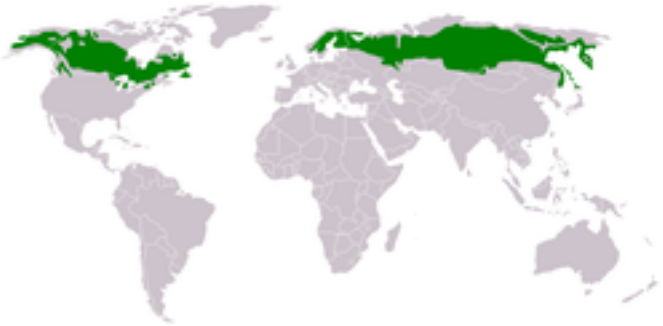
- **Rainfall is expected**
- **to increase in the middle and high latitude continents and**
- **decrease in the lower latitudes.**
- **This will cause flooding and erosion in some regions, and drought in others.**
- **.**

GLOBAL WARMING AND CLIMATE CHANGE 6

- **Boreal forests and permafrost areas are expected to undergo major changes. (permafrost or permafrost soil is soil at or below the freezing point of water (0°C or 32°F) for two or more years)**
- **Coastline ecosystems, flatlands and small islands risk disappearing altogether.**
- **Changes in water availability will affect crop yields and increase the incidence of vector-borne diseases.**
- **For example there has already been a global resurgence of malaria, dengue fever and cholera**

GLOBAL WARMING AND CLIMATE CHANGE 7

- **boreal forests** high northern latitudes, just below the tundra, and just above the steppes.



GLOBAL WARMING AND CLIMATE CHANGE 8

SHIFT IN CLIMATE ZONES

Projected changes in rainfall and temperature for the next 50 years could result in

- **a shift of climate zones by several hundred kilometres towards the poles.**
- **Flora and fauna will lag behind the climate shifts and**
- **find themselves in 'hostile' environments.**
- **As some species will not be able to adapt to such rapid changes in habitat,**
- **species will become extinct in greater numbers than before.**

GLOBAL WARMING AND CLIMATE CHANGE 9

INCREASE IN THE FREQUENCY AND INTENSITY OF STORMS

- **A shift in large-scale weather patterns could greatly alter the variability and the extremes of weather patterns.**

For example,

- **intense storms usually only develop around oceans that are warmer than 26°C. Global warming means larger areas of ocean will reach such temperatures.**

GLOBAL WARMING AND CLIMATE CHANGE 10

- **This will cause more frequent and more intense storms all over the world. Already, the worldwide increase in natural disasters is causing extraordinary losses for property insurers.**
- **Annual insured losses have risen dramatically – from about US$1.8 billion a year in the 1980s to over US$10 billion a year in the 1990s.**

RISING SEA LEVELS

- The UN International Panel on Climate Change (IPCC) predicts that
- thermal expansion of the oceans and
- melting of the glaciers

could cause average sea levels to rise by 6cm a decade.

Increased flooding

- will displace millions,
- alter coastlines,
- contaminate freshwater supplies, and
- destroy agricultural land.
- Islands, lowlands and coastlines are particularly at risk from devastating flood and storm damage.

HOW GLOBAL ENVIRONMENTAL IMPACTS AFFECT TOURISM 1

Natural disasters Catastrophes like

- floods,
- earthquakes,
- wildfires,
- volcanoes,
- avalanches,
- drought and diseases

can have a serious effect on inbound and domestic tourism and thus on local tourism industries.

HOW GLOBAL ENVIRONMENTAL IMPACTS AFFECT TOURISM 2

- The outbreak of the foot and mouth disease epidemic in England earlier this year (2001), for instance, has severely affected Great Britain's inbound tourism market.
- 75% of hotels in England,
- 81% in Scotland and
- 85% in Wales continued to be affected by the foot and mouth outbreak,
- and over 60% forecast a decline in business in the June-September 2001 period.

HOW GLOBAL ENVIRONMENTAL IMPACTS AFFECT TOURISM 3

Climate change

- Tourism not only contributes to climate change, but is affected by it as well.
- Climate change is likely to increase the severity and frequency of storms and severe weather events,

  which can have disastrous effects on tourism in the affected regions.
- Some of the other impacts that the world risks as a result of global warming are

  drought, diseases and heat waves.

HOW GLOBAL ENVIRONMENTAL IMPACTS AFFECT TOURISM 4

These negative impacts can keep tourists away from the holiday destinations.

Global warming may cause:

- Less snowfall at ski resorts, meaning a shorter skiing seasons in the Alpine region.
- In already hot areas like Asia and the Mediterranean, tourists will stay away because of immense heat, and out of fear of diseases and water shortages.

HOW GLOBAL ENVIRONMENTAL IMPACTS AFFECT TOURISM 5

- Harm to vulnerable ecosystems such as rainforests and coral reefs because of rising temperatures and less rainfall.
- A major risk to coral reefs is bleaching, which occurs when coral is stressed by temperature increases,
- high or low levels of salinity,
- lower water quality, and
- an increase in suspended sediments.

HOW GLOBAL ENVIRONMENTAL IMPACTS AFFECT TOURISM 6

- These conditions cause the zooxanthallae (the single-celled algae which forms the colors within the coral) to leave the coral. Without the algae, the coral appears white, or "bleached" - and rapidly dies. The Great Barrier Reef, which supports a US$ 640 million tourism industry, has been experiencing coral bleaching events for the last 20 years.

HOW GLOBAL ENVIRONMENTAL IMPACTS AFFECT TOURISM 7

- Rising sea levels, the result of melting glaciers and polar ice. Higher sea levels will threaten coastal and marine areas with widespread floods in low-lying countries and island states, increasing the loss of coastal land. Beaches and islands that are major tourism attractions may be the first areas to be affected.

HOW GLOBAL ENVIRONMENTAL IMPACTS AFFECT TOURISM 8

- Increased events of extreme weather, such as tornadoes, hurricanes and typhoons.
- These are already becoming more prevalent in tourist areas in the Caribbean and South East Asia.
- Hurricane Mitch in 1998, for instance, heavily affected tourism in the Caribbean. Wind damage, storm waves, heavy rains and flooding caused major losses in the local tourism sector.

EFFECTS OF OTHER INDUSTRIES ON TOURISM 1

- Impacts from other industries often have a more dramatic effect on the environment and can seriously affect tourism.
- ***OIL SPILLS***, like the oil tanker disaster that occurred off the Galapagos Islands (Ecuador) in January 2001,
- can cause severe short-term damage to tourist attractions.
- In that case, a freight ship loaded with 160,000 gallons of diesel fuel and 80,000 gallons of other petroleum products ran a ground on the coast of San Cristóbal and spilled nearly all of its load.
- Unique local marine and land species and the tourism potential of the area were badly affected.

EFFECTS OF OTHER INDUSTRIES ON TOURISM 2

- **AGRICULTURAL RUNOFF OR INDUSTRIAL DISCHARGES** can cause
- water pollution and may cause
- algae blooms
- like those that occurred in the Adriatic Sea in the early 1990s.
- In spite of improved control of sewage from tourism developments, the Mediterranean sea floor is increasingly carpeted with these quick-growing invaders, many rising 30 inches or more above anchoring runners. They appear equally adept at colonizing rock, mud, and sand in a virtually continuous swath that can extend from the beach out to a depth of about 150 feet, smothering coral reefs, fish and other sea flora and fauna in the process.

EFFECTS OF OTHER INDUSTRIES ON TOURISM 3

- *Destructive practices* such as **BLAST FISHING, FISHING WITH POISONOUS CHEMICALS LIKE CYANIDE, AND MURO-AMI NETTING** (pounding reefs with weighted bags to scare fish out of crevices) directly destroy corals.
- They can also destroy a major attra ctions for tourists

HOW TOURISM CAN CONTRIBUTE TO ENVIRONMENTAL CONSERVATION

- **The tourism industry can contribute to conservation through:**
- **Financial Contributions**

Direct financial contributions

Contributions to government revenues

- **Improved Environmental Management And Planning**
- **Environmental Awareness Raising**
- **Protection And Preservation**
- **Alternative employment**
- **Regulatory Measures**

Financial Contributions 1

Direct financial contributions

Tourism can contribute directly to the conservation of sensitive areas and habitat.

- Revenue from park-entrance fees and similar sources can be allocated specifically to

  pay for the protection and management of environmentally sensitive areas.
- Special fees for park operations or conservation activities can be collected from tourists or tour operators

Financial Contributions 2

Contributions to government revenues

- User fees,
- income taxes,
- taxes on sales or rental of recreation equipment,
- and license fees for activities such as hunting and fishing

can provide governments with the funds needed to manage natural resources. Such funds can be used for overall conservation programs and activities, such as park ranger salaries and park maintenance

Financial Contributions 3

For Costa Rica, for example, tourism represents

- 72% of national monetary reserves,
- generates 140,000 jobs and
- produces 8.4% of the gross domestic product.
- The country has 25% of its territory classified under some category of conservation management.
- In 1999, protected areas welcomed 866,083 national and foreign tourists, who generated about US$ 2.5 million in admission fees and payment of services.

Improved Environmental Management And Planning 1

- Sound environmental management of tourism facilities and especially hotels can increase the benefits to natural areas.
- But this requires careful planning for controlled development, based on analysis of the environmental resources of the area.
- Planning helps to make choices between conflicting uses, or to find ways to make them compatible.
- By planning early for tourism development, damaging and expensive mistakes can be prevented, avoiding the gradual deterioration of environmental assets significant to tourism.

Improved Environmental Management And Planning 2

- Cleaner production techniques

  can be important tools for planning and operating tourism facilities in a way that minimizes their environmental impacts.
- For example, green building

  (using energy-efficient and non-polluting construction materials, sewage systems and energy sources)

  is an increasingly important way for the tourism industry to decrease its impact on the environment. And because waste treatment and disposal are often major, long-term environmental problems in the tourism industry,
- pollution prevention and waste minimization techniques are especially important for the tourism industry.

Environmental Awareness Raising 1

- Tourism has the potential to increase public appreciation of the environment and to spread awareness of environmental problems when it brings people into closer contact with nature and the environment.
- This confrontation may raise the awareness of the value of nature and lead to environmentally conscious behavior to preserve the environment.

Environmental Awareness Raising 2

- If it is to be sustainable in the long run, tourism must incorporate the principles and practices of sustainable consumption.
- Sustainable consumption includes building consumer demand for products that have been made using cleaner production techniques, for tourism services - that are provided in a way that minimizes environmental impacts.
- The tourism industry can play a key role in providing environmental information and raising awareness among tourists of the environmental consequences of their actions. Tourists and tourism-related businesses consume an enormous quantity of goods and services; moving them toward using those that are produced and provided in an environmentally sustainable way, from cradle to grave, could have an enormous positive impact on the planet's environment.

Protection and Preservation

- Tourism can significantly contribute to environmental protection, conservation and restoration of biological diversity
- Because of their attractiveness, pristine sites and natural areas are identified as valuable and this lead to creation of national and wildlife parks.
- In Hawaii, new laws and regulations have been enacted to preserve the Hawaiian rainforest and native species.
- The coral reefs around the islands and the marine life that depend on them for survival are also protected.
- Hawaii now has become an international center for research on ecological systems - and the promotion and preservation of the islands' tourism industry was the main motivation for these actions. (Source: Mundus)

Alternative employment

- Tourism can provide an alternative development strategies that may have lesser environmental impacts
- a Spanish language school created in 1996 in the Guatemalan village of San Andres, is an example.
- The community-owned school, located in the Maya Biosphere Reserve, combines individual language courses with home stay opportunities and community-led eco-tours.
- It receives around 1,800 tourists yearly, mostly from the US and Europe, and employs almost 100 residents, of whom around
- 60% were previously engaged in mostly illegal timber extraction, hunting and *milpas*, or slash-and-burn agriculture.
- the majority of villagers has significantly reduced hunting practices, and "slash-and-burn".

Regulatory measures

- **Regulatory measures** help offset negative impacts; for instance, controls on the number of tourist activities and movement of visitors within protected areas can limit impacts on the ecosystem and help maintain the integrity and vitality of the site. Such limits can also reduce the negative impacts on resources.
- Limits should be established after an in-depth analysis of the maximum sustainable visitor capacity.
- This strategy is being used in the Galapagos Islands, where the number of ships allowed to cruise and only designated islands can be visited, ensuring visitors have little impact on the sensitive environment and animal habitats.

SOCIO-CULTURAL IMPACTS OF TOURISM

- **NEGATIVE SOCIO-CULTURAL IMPACTS FROM TOURISM**
- **HOW TOURISM CAN CONTRIBUTE TO SOCIO-CULTURAL CONSERVATION**

NEGATIVE SOCIO-CULTURAL IMPACTS FROM TOURISM

- **Change or loss of indigenous identity and values**
- **Physical influences causing social stress**
- **Ethical issues**
- **Culture Clashes**

Change or loss of indigenous identity and values 1

- Tourism can cause change or loss of local identity and values, brought about by several closely related influences:

- **Commodification**
  Tourism can turn local cultures into commodities when religious rituals, traditional ethnic rites and festivals are reduced and sanitized to conform to tourist expectations, Once a destination is sold as a tourism product, and the tourism demand for souvenirs, arts, entertainment and other commodities begins to exert influence,
- basic changes in human values may occur. Sacred sites and objects may not be respected when they are perceived as goods to trade.

Change or loss of indigenous identity and values 2

Standardization

Destinations risk standardization in the process of satisfying tourists' desires for familiar facilities.

- landscape, accommodation, food and drinks, etc., must meet the tourists' desire for the new and unfamiliar,
- not be too new or strange because few tourists are actually looking for completely new things.
- Tourists often look for recognizable facilities in an unfamiliar environment, like well-known fast-food restaurants and hotel chains.

Change or loss of indigenous identity and values 3

Loss of authenticity

- Adapting cultural expressions and manifestations to the tastes of tourists or even performing shows as if they were "real life" constitutes “loss of authenticity". As long as tourists just want a glimpse of the local atmosphere, a quick glance at local life, without any knowledge or even interest, staging will be inevitable

Change or loss of indigenous identity and values 4

Adaptation to tourist demands

Tourists want souvenirs, arts, crafts, and cultural manifestations,

- craftsmen and have made changes in design of their products to bring them more in line with the new customers' tastes.
- cultural erosion may occur due to the commodification of cultural goods.

Physical influences causing social stress 1

The physical influences increasing tourism flow, and creating developments, can cause severe social Stress to local communities

Resource use conflicts,

- competition between tourism and local populations for the use of prime resources like water and energy because of scarce supply.
- environmental degradation and increased infrastructure costs for the local community - for example, higher taxes to pay for improvements to the water supply or sanitation facilities.

Physical influences causing social stress 2

Cultural deterioration.

Damage to cultural resources may arise from
vandalism,
littering,
and illegal removal of cultural heritage items.

A common problem at archaeological sites in countries such as Egypt, Colombia, Mexico and Peru is that poorly paid guards supplement their income by
selling artifacts to tourists
degradation of cultural sites
may occur when historic sites and buildings are unprotected and the traditionally built environment is replaced or virtually disappears.

Physical influences causing social stress 3

Conflicts with traditional land-uses,

- Conflicts arise when the choice has to be made between development of the land for tourist facilities or infrastructure and local traditional land-use.
- The indigenous population of such destinations is frequently the loser in the contest for these resources as the economic value which tourism brings often counts for more.
- As an example of how local people can suffer from tourism development, in coastal areas construction of shoreline hotels and tourist faculties often cuts off access for the locals to traditional fishing ground and even recreational use of the areas.

Culture clashes 1

Cultural clashes can take place as a result of differences in

- cultures,
- ethnic and religious groups,
- values and lifestyles,
- languages, and
- levels of prosperity.

Culture clashes 2

Economic inequality

Many tourists come from societies with different consumption patterns and lifestyles, seeking pleasure, spending large amounts of money and sometimes behaving in ways that even they would not accept at home.

- One effect is that local people that come in contact with these tourists may develop a sort of copying behavior, as they want to live and behave in the same way.
- Especially in less developed countries, there is likely to be a growing distinction between the 'haves' and 'have-nots', which may increase social and sometimes ethnic tensions.
- In resorts in destination countries such as Jamaica, Indonesia or Brazil, tourism employees with average yearly salaries of US$ 1,200 to 3,000 spend their working hours in close contact with guests whose yearly income is well over US$ 80,000.

Culture clashes 3

Irritation due to tourist behavior

Tourists often, out of ignorance or carelessness, fail to respect local customs and moral values. When they do, they can bring about irritation and stereotyping. They take a quick snapshot and are gone, and by so acting invade the local peoples' lives.

Job level friction

many jobs occupied by local people in the tourist industry are at a lower level, such as housemaids, waiters, gardeners and other practical work, while higher-paying and more prestigious managerial jobs go to foreigners or "urbanized" nationals. Due to a lack of professional training, as well as to the influence of hotel or restaurant chains at the destination, people with the know-how needed to perform higher level jobs are often attracted from other countries. This may cause friction and irritation and increases the gap between the cultures.

Ethical issues 1

- Partly due to the above impacts, tourism can create more serious situations where ethical and even criminal issues are involved.
- **Crime generation**
  Crime rates typically increase with the growth and urbanization of an area, and growth of mass tourism is often accompanied by increased crime. The presence of a large number of tourists with a lot of money to spend, and often carrying valuables such as cameras and jewelry, increases the attraction for criminals and brings with it activities like robbery and drug dealing.

Ethical issues 2

- **Child labour**
  ILO studies show that many jobs in the tourism sector have working and employment conditions that leave much to be desired: long hours, unstable employment, low pay, little training and poor chances for qualification. In addition, recent developments in the travel and tourism trade (liberalization, competition, concentration, drop in travel fares, growth of subcontracting) and introduction of new technologies seem to reinforce the trend towards more precarious, flexible employment conditions. For many such jobs young children are recruited, as they are cheap and flexible employees

Ethical issues 3

Prostitution and sex tourism

- The commercial sexual exploitation of children and young women has paralleled the growth of tourism in many parts of the world. Though tourism is not the cause of sexual exploitation, it provides easy access to it.
- Tourism also brings consumerism to many parts of the world previously denied access to luxury commodities and services. The lure of this easy money has caused many young people, including children, to trade their bodies in exchange for T-shirts, personal stereos, bikes and even air tickets out of the country.
- In other situations children are trafficked into the brothels on the margins of the tourist areas and sold into sex slavery, very rarely earning enough money to escape.

HOW TOURISM CAN CONTRIBUTE TO SOCIO-CULTURAL CONSERVATION 1

- Tourism can contribute to positive developments, not just negative impacts.
- It has the potential to promote social development through
- employment creation,
- income redistribution and
- poverty alleviation.
- Other potential positive impacts of tourism include:

HOW TOURISM CAN CONTRIBUTE TO SOCIO-CULTURAL CONSERVATION 2

Tourism as a force for peace

Traveling brings people into contact with each other and, as tourism has an educational element,

- it can increase understanding between peoples and cultures and
- provide cultural exchange between hosts and guests.
- people to develop mutual sympathy and understanding and to reduce their prejudices.
- For example, jobs provided by tourism in Belfast, Northern Ireland, are expected to help demobilize paramilitary groups as the peace process is put in place. In the end, sympathy and understanding can lead to a decrease of tension in the world and thus contribute to peace.

HOW TOURISM CAN CONTRIBUTE TO SOCIO-CULTURAL CONSERVATION 3

Strengthening communities

Tourism can add to the vitality of communities in many ways.

- events and festivals
- The jobs created by tourism can act as a vital incentive to reduce emigration from rural areas.
- Local people can also increase their influence on tourism development, as well as improve their job and earnings prospects

HOW TOURISM CAN CONTRIBUTE TO SOCIO-CULTURAL CONSERVATION 4

Facilities developed for tourism can benefit residents

tourism can bring higher living standards to a destination. Benefits can include

- upgraded infrastructure,
- health and transport improvements,
- new sport and recreational facilities,
- restaurants, and public spaces as well as
- an influx of better-quality commodities and food.

Revaluation of culture and traditions

Tourism can boost the preservation and transmission of cultural and historical traditions, which often contributes to the conservation and sustainable management of natural resources, the protection of local heritage, and a renaissance of indigenous cultures, cultural arts and crafts.

HOW TOURISM CAN CONTRIBUTE TO SOCIO-CULTURAL CONSERVATION 6

Tourism encourages civic involvement and pride

Tourism also helps raise local awareness of the financial value of natural and cultural sites and can stimulate a feeling of pride in local and national heritage and interest in its conservation. More broadly, the involvement of local communities in tourism development and operation appears to be an important condition for the conservation and sustainable use of biodiversity.

TOOLS FOR MANAGING IMPACTS 1

- In order to **mitigate** the environmental, socio-cultural and economic impacts of tourism, we ought to use several regulatory, obligatory and voluntary instruments.

- **TOOLS OF IMPACT MANAGEMENT**
  1 Codes of Conduct (Codes of Ethics)
  2 Best Practice Guidelines
  3 Eco-labels
  4 Standards
  5 Environmental Impact Assessment (EIA)
  6 Environmental Management Systems (EMS)

TOOLS FOR MANAGING IMPACTS 2

- **1 Codes of Conduct (Codes of Ethics)**

  Definition: Voluntary instruments that establish guidelines and recommendations for action in general or aimed at a specific sector (code of conduct for waste water treatment, code of conduct for eco-tourists, code of conduct for pesticides use).

  They are normally used as an initial measure for raising awareness in a sector about a certain problem.

TOOLS FOR MANAGING IMPACTS 3

There are 4 kinds of codes of conduct

1. General Tourist Industry Codes
2. Codes that address specific sectors and activities
3. Codes of conduct for tourists
4. Codes directed to the host population

broad variety of codes promoted by

international organizations,
governmental agencies,
tourist industry associations
and by NGO's.

TOOLS FOR MANAGING IMPACTS 4

- **Good examples of international and general codes of conduct:**
  - **Sustainable Tourism Charter**
  - **International Chamber of Commerce (ICC) Business Charter**
  - **Cultural Tourism Charter**
  - **Berlin Declaration on Biological Diversity and Sustainable Tourism**
  - **Agenda 21 for the Tourist and Travel Industry (WTO, WTTC, Earth Council)**

TOOLS FOR MANAGING IMPACTS 5

- 2 Best Practice Guidelines
- Definition: BPG are instruments for improving environmental management of a company, establishment or even a destination by complying with a set of measures that are established as an example and objective of good practice (good and best practices for waste water treatment, energy consumption, solid waste, landscaping, construction, indoor air and outdoor air pollution, safety and health).

TOOLS FOR MANAGING IMPACTS 6

- Each different best practice manual covers different concepts and addresses them in varying detail, depending on the characteristics of the industry. But there are some common areas for best practice guidelines for the tourism sector:
  - Water management
  - Energy
  - Solid Waste
  - Emissions and effluents
  - Environmental impacts
  - Noises

TOOLS FOR MANAGING IMPACTS 7

- Within these areas another set of complementary measures should be initiated. The following sections are established for each case:

  - **Environmental Objectives to achieve**
  - **Action guaranteeing fulfilment of objectives**
  - **Ideas and solutions for management, technological developments and investment.**

TOOLS FOR MANAGING IMPACTS 8

Example:

Area: Water

Sections: Environmental Objectives

- Avoid consumption that affects renovation rates, creating conditions in water tables
- Prevent the destruction of water resources because of tourist use (coasts, wetlands, rivers)
- Avoid pollution of water tables and coasts
- Prevent tourist consumption that negatively affects traditional local activities.

TOOLS FOR MANAGING IMPACTS 9

Actions:

- Promote all possible measures that would save water
- Establish water re-use systems
- Motivate the tourist to change their attitude for saving the water

Ideas and Solutions:

- Adjust discharge volumes in toilets to the minimum level
- Fit low-consumption heads in showers
- Fit flow meters to ht water pipes limiting flow time
- Monitor an maintain water pipes and circuits in good condition to avoid losses
- Fit high-efficiency irrigation systems: drip irrigation and porous pipes

TOOLS FOR MANAGING IMPACTS 10

- Use drought-resistant plants
- Fit rain water collection systems in the building, on roofs and flat surfaces
- Re-use waste water for other purposes [agriculture, homes use (toilets, garden)]
- Encourage tourists, hotel owners and residents to save water
- Re-use swimming pool water for other purposes
- In coastal areas use sea water in swimming pools.
- Desalination: uses reverse osmosis method to produce drinking water and other touristic consumptions.

TOOLS FOR MANAGING IMPACTS 11

- 3 Eco-labels (Green labels)
- Definition: Instruments for informing consumers (tourists) about goods and services that are environmentally friendlier than their competitors (sunglasses uv, blue-flag for beaches, Biosphere Hotels, Restaurants using organic foods etc.)

- Common Characteristics of Tourist Eco-labels:

  1 Accurate (correct) environmental information for customers to facilitate their decision making process for getting tourist goods and services.

TOOLS FOR MANAGING IMPACTS 12

- 2 Reducing institutions environmental impact through adopting necessary measures
- 3 Motivation for the technological innovation in the tourism sector.

4 Standards

Definition: Standards act as a means of complementing government inspection and to make control more effective. Standards indicate desirable or required levels for achieving certain objectives in the specific area (levels of acceptable pollution, energy efficiency).

TOOLS FOR MANAGING IMPACTS 13

- Since the environmental capabilities for carrying, withstanding, absorbing and assimilating various development activities and their consequences are limited, we have to know these capacities and their threshold limits in order to avoid the substantial adverse impacts on the environment.

TOOLS FOR MANAGING IMPACTS 14

- 5 Environmental Impact Assessment (EIA)

Definition: It is a systematic evaluation of all significant environmental, socio-cultural and economic consequences an action is likely to have upon the environment before the action takes place. *It should be initiated before the project, program or policy, before development decision are made.*

Objectives of EIA

1 To identify, predict and evaluate significant impacts

TOOLS FOR MANAGING IMPACTS 15

2 To present impact data in Reports to decision-makers and public

3 To find ways to reduce unacceptable impacts and to shape the project that it suits to local government

Results of EIA

1 Early identification of projects causing unacceptable impacts

2 Designing projects which minimize environmental damage and enhance benefits

TOOLS FOR MANAGING IMPACTS 16

3 Protection of environment

4 Supporting the sustainable development

Main Parties involved in EIA

1 The investor (developer)

2 The competent authority (Ministry of env)

3 EIA Commission (Expert Groups)

4 Advisors and Consultants

5 Public-people, NGOs.

TOOLS FOR MANAGING IMPACTS 17

Principal Methods of EIA

1 Checklists

2 Matrices

3 Mapping and overlay charts

4 Sequence Diagrams and flowcharts

5 Mathematical Modeling

1 Checklists: The main purpose of a checklist is to guide the project evaluator as to where to look for possible environmental impacts of a development project.

TOOLS FOR MANAGING IMPACTS 18

2 Matrices: Shows us interactions between proposed activities and potential environmental effects. All development activities are listed across the top and all environmental components might be impacted are listed at the side.

3 Mapping and overlay charts: The method consists of overlaying a series of maps, each containing data on environmental, social and economic variables and choosing a preferred combination of variable interactions. Computers may be used to produce these maps.

TOOLS FOR MANAGING IMPACTS 19

4 Sequence Diagrams and flowcharts: Sequence diagrams shows cause-effect relationships and are effective in explaining how the environment works.

5 Mathematical Modeling: MM can be a reliable environmental assessment technique to forecast potential changes in the environment. In the USA, MM stopped the building of commercial supersonic aircraft created a strong vibration that significantly affected the construction materials and the health of people exposed to it.

TOOLS FOR MANAGING IMPACTS 20

6 Environmental Management Systems (EMS)

Definition: is to define and implement the environmental policy that is best suited to the activity, goods and services supplied by the company. EMS provides a framework for each company to constantly manage its environmental actions in an active and systematic manner (planning, organization, application and monitoring).

TOOLS FOR MANAGING IMPACTS 21

- EMS defn. cont.
- An EMS is part of a company's system of management. It's objective is to reduce an organization environmental impact, by defining an environmental policy.
- An EMS helps business to evaluate, manage and reduce their environmental impacts by providing a methodology to integrate environmental management into business operations in a systematic manner.

TOOLS FOR MANAGING IMPACTS 22

- Benefits of EMS

- **EMS enables tourism businesses to comply with, and even exceed, environment legislation.**
- **EMS lowers costs by reducing resource use, improving operating efficiency, lowering waste output and avoiding non-compliance fines.**
- **EMS makes a property a safer and healthier environment for employees and visitors. Work related accidents, occupational illnesses and related absenteeism can therefore be reduced.**
- **Along with the growth of public environment awareness, tourists are demanding 'greener' services. EMS enables businesses to meet this demand. The growth of tourism eco-labels and environment awards is a strong indication of the growing response of tourists to environmentally responsible services.**

TOOLS FOR MANAGING IMPACTS 23

- Benefits of EMS
- **Banks and insurance companies now require information on environment performance when making lending and coverage decisions.**
- **Corporate social responsibility is a growing agenda. Companies are no longer judged by their profit alone and face mounting pressure to participate in improving the quality of life of their customers, employees and the wider society within which they operate. EMS is the first critical step in this direction.**

Stages of Environmental Management Systems 1

- A typical EMS consists of the following stages:
- Stage 1: Assign Responsibility (Establish an EM Team for the company)

  Review the environmental status of the company

Stages of Environmental Management Systems 2

Stages of EMS cont.

- Stage 2: Establish policy, objectives and targets for the company
- Stage 3:Implement EMS through the environment management program
- Stage 4: Conduct the EMS audit and report on environment performance

Stages of Environmental Management Systems 3

- ***EMS STAGE 1: ASSIGN RESPONSIBILITY AND CONDUCT ENVIRONMENT STATUS REVIEW***
- Assign Environment Responsibility
- In any business, responsibility for a task must be assigned to someone to ensure that it is performed and completed. Responsibility for EMS can be assigned to one employee or to a group. Most tourism businesses appoint an 'environment champion', supported by an environment management team. The environment management team should include representatives from top management and from all departments: this will ensure that the environment burdens of the entire business are identified and included in the EMS.

Stages of Environmental Management Systems 4

- The environment champion and management team should have the skills to:
- **Appreciate the importance of EMS;**
- **Understand legislative requirements and the implications of noncompliance;**
- **Appreciate the technicalities of EMS so that priority actions can be identified;**
- **Implement EMS, which includes gathering information, conducting interviews, data analysis and report writing.**

Stages of Environmental Management Systems 5

- Conducting the Environment Status Review
- An environment status review is similar to a SWOT analysis. It identifies the environment-related strengths, weakness, opportunities and threats of a business
- by assessing:
- **How and where resources are used;**
- **How and where waste is generated;**
- **Which codes and standards are being violated in daily business practices.**

Stages of Environmental Management Systems 6

- The Environment Status Review involves data collection, interviews, inspection, observation, and review of existing documents and records on resource/materials use and waste output. The objective is to gather baseline data to:
- Establish environment management objectives and targets;
- Identify the best areas to start EMS that will bring both business and environment benefits.

Stages of Environmental Management Systems 7

- It is best to begin with the documentary evidence and supplement this information
- with data gathered through interviews, observation and inspection.

EMS in a hospitality business is based on nine action areas:

- **Reduce water use;**
- **Reduce waste water output;**
- **Reduce energy use;**
- **Reduce waste;**
- **Purchase environmentally-preferable products;**
- **Lower emissions, including ozone-depleting substances;**
- **Improve indoor air quality;**
- **Reduce noise;**
- **Monitor and document environment performance.**

Stages of Environmental Management Systems 8

- A series of fact sheets and environment status review checklists for each of the above areas are given in textbook. (The fact sheets contain important background information for an environment review). Neither the fact sheets nor the review checklists are fully comprehensive; they have been developed to demonstrate the type of background data and issues that should be considered in an environment status review.

Stages of Environmental Management Systems 9

- ***EMS STAGE 2: ESTABLISH ENVIRONMENT POLICY AND SET ENVIRONMENT OBJECTIVES AND TARGETS***
- Compile the Environment Status Report
- To fully analyse and appreciate the data gathered through the environment status review, it should be compiled into an environment status report. This report should include:
- **Volume of costs of water and energy used;**
- **Volumes and charges of waste disposal;**

Stages of Environmental Management Systems 10

- **Inventory of all materials purchased;**
- **• Levels of compliance;**
- **• Environment improvement activities already in place;**
- **• Management and operation procedures that could facilitate/obstruct**
- **EMS implementation;**
- **• Local initiatives that could facilitate EMS implementation – for**
- **example voluntary industry partnerships on the environment, ecolabelling**

Stages of Environmental Management Systems 10

- **schemes, loans or grants for environment improvement,**
- **environment help-lines, EMS literature produced by the national**
- **environment agency or local authorities, etc;**
- **• Employee interest in the impending EMS;**
- **• Potential visitor response to the impending EMS;**
- **• Time spent on the review;**
- **• Sources of information, including interviews and observations;**
- **• Recommendations on EMS objectives and targets.**

Stages of Environmental Management Systems 11

- Verify Compliance with Current and Imminent Environment Legislation
- A full review of relevant environment legislation needs to be undertaken at the same time as the environment status review. The environment status report willidentify areas where legislation is being violated. It also helps to be aware of impending legislation, since the EMS can then be planned to meet and exceed the new requirements.

Stages of Environmental Management Systems 12

Set EMS Objectives and Targets

- The environment status report should provide the information needed for establishing EMS objectives and targets. The objectives should specify environment goals, and the targets should indicate the level of improvement to be attained. For example:

- **Objective: Reduce carbon dioxide output**
- **Target: Reduce carbon dioxide output by 12% of 1998 levels by 2001**

- Activities that are highly resource-intensive, generate large quantities of waste and emissions, violate legislation, are poor environment practice, and pose health hazards to employees and guests, should be given priority.
- Objectives and targets should be established with input from all departments and approved by top management.

Stages of Environmental Management Systems 13

Establish the Environment Policy

- *The environment policy* is a public statement of a company's environmental commitment and responsibility. It declares how the business is responding to environment challenges, and establishes the overall framework for achieving objectives and targets. It also validates the EMS.
- The policy should be developed on the basis of the findings of the environment status review and the objectives and targets established. It must have top management support. The policy statements of five businesses are reproduced below.

Stages of Environmental Management Systems 14

Golden Tulip Hotel's Environment Policy

- *Golden Tulip and Tulip Inn Management Hotels oblige themselves to:*
- ***Conduct a proactive environment policy in all hotel departments and offices;***
- ***Meet environment requirements, rules and regulations;***
- ***Optimise use of energy, water and materials;***
- ***Limit waste, and recycle when possible;***
- ***Limit the use of harmful materials;***
- ***Stimulate suppliers and guests to contribute to reducing the environment load;***
- ***Share knowledge and experience with other companies in the hospitality industry;***
- ***Provide hotel staff with the information and means to reach the Green Objectives;***
- ***Measure the level of implementation on a regular basis;***
- ***Evaluate and adjust the measures taken that should lead to an acceptable environment load;***
- ***Unceasingly introduce improvements to the Green Programme.***

Stages of Environmental Management Systems 15

EMS STAGE 3: IMPLEMENTING THE ENVIRONMENT MANAGEMENT PROGRAMME

- An environment management programme is needed to implement the EMS. It is the mechanism through which environment objectives and targets are achieved and the environment policy realised.
- An environment management programme works to integrate environment action – reducing resource use and waste output – into business activity through identifying the specific procedures and technological improvements that need to be incorporated into existing practices and operations. (An environment management programme is referred to as an 'environment action plan' in some sources.)

Stages of Environmental Management Systems 16

- It helps to start by drawing up an activity plan, so that a complete overview of the environment management programme can be seen at a glance, perhaps in the form of a table. For example:
- Objective/Target Action Budget Deadline Department Concerned

Stages of Environmental Management Systems 17

An environment management programme for hospitality facilities typically consists of the following action areas:

- **Reducing water use and wastewater output;**
- **Lowering energy consumption;**
- **Reducing waste output;**
- **Purchasing environment-preferable products;**
- **Lowering emissions, including of ozone-depleting substances;**
- **Improving the indoor environment;**
- **Lowering noise;**
- **Internal communication, delegation and training;**
- **Environment communication to guests;**
- **Monitoring and documenting progress.**

Stages of Environmental Management Systems 18

- A range of environment management options for each of the above action areas will now be discussed. It will help to bear in mind these considerations:
- **What procedural or process changes might be needed for environment improvement?**
- **What technology could be used to facilitate environment management?**
- **What changes will increase efficiency?**
- **What improvements will require substantial capital investment?**
- **Will better training help address some of the issues?**

Stages of Environmental Management Systems 19

ENVIRONMENT MANAGEMENT PROGRAMME FOR WATER AND WASTE WATER

Water management in hospitality facilities includes:

- **Maintaining water quality;**
- **Managing water storage and distribution works;**
- **Reducing water use;**
- **Reducing wastewater output;**
- **Purifying water for swimming-pools;**
- **Monitoring water consumption;**
- **Reusing treated wastewater;**
- **Maintaining water supply quality.**

Stages of Environmental Management Systems 20

- Most countries have water quality standards, and ensuring compliance with them is important. The WHO and the EU have their own standards, which can be referred to for additional guidance.
- The most common indicators of poor water quality are: suspended solids,
- discolouring due to corrosion,
- rising pH levels,
- excessive hardness,
- high mineral content and bacterial contamination, especially legionnella pneumophilia.
- Any change in water quality should be brought to the attention of the water supply company/authority. A quick review of the on-site water storage and distribution works should then be conducted to fi nd out if the source of the contamination is on or off the property.

Stages of Environmental Management Systems 21

- Reducing Water Use

GOOD HOUSEKEEPING AND MAINTENANCE OPTIONS FOR REDUCING WATER USE

- **Repair leaks and dripping pipes;**
- **Run washing machines and dishwashers only when fully loaded;**

When watering gardens, direct flow to the roots of plants;

- **Place plastic containers filled with water in toilet cisterns to reduce flush water volume;**
- **Encourage employees to save water;**
- **Collect rainwater for watering gardens and other non-drinking uses;**
- **Avoid rinsing under running taps: use buckets or bowls instead;**
- **Place tent cards in bathrooms inviting guests to save water;**
- **Invite guests to reuse their towels and linen.**

Stages of Environmental Management Systems 22

- **REPAIR AND RETROFIT OPTIONS FOR REDUCING WATER USE**
- **Place volume reducers in toilet cisterns;**
- **Install hot and cold water mixers in all outlets;**
- **Install pressure fl ush valves on toilets and urinals. This can reduce flush water by 30-50%;**
- **Retrofit taps and showers with aerators. This can reduce water volumeby 35%;**
- **Install photoelectric cells in public washstands;**
- **Install chemically purifi ed urinals that do not use water.**

REFURBISHMENT OPTIONS FOR WATER

- **Replace baths with showers;**
- **Fit low-flow showerheads and toilets.**

Stages of Environmental Management Systems 23

- ***EMS STAGE 4: CONDUCTING THE EMS AUDIT AND REPORTING ON ENVIRONMENT PERFORMANCE***

4.1 Environment Management System (EMS) Audit

4.2 Reporting on Environment Performance

4.1 Environment Management System (EMS) Audit

The Environment Audit is necessary to:

- Verify the effectiveness of the environment management programme;
- Ensure that environment objectives and targets are being met;
- Evaluate how the EMS should be modified and expanded in the context of future business expansion, new environment legislation, emerging environment issues, and the growth of the tourism and hospitality industry as a whole.

Stages of Environmental Management Systems 25

The ISO 14000 series on environment management include three standards that provide guidance on environment auditing:

- **ISO 14010 Guidelines for Environment Auditing; General Principles;**
- **ISO 14011 Guidelines for Environment Auditing; Audit Procedures; Auditing of Environment Management Systems;**
- **ISO 14012 Guidelines for Environment Auditing; Qualification Criteria for Environment Auditors.**

Stages of Environmental Management Systems 26

EMS audits are generally conducted every one or two years.

An audit can be performed by the internal environment management team,

by an external environment auditor,

or through a joint internal and external effort.

In selecting auditors, it is important to bear in mind the following:

- **The auditors should have a good appreciation of environment management systems and issues. ISO 14012 outlines specific criteria for environment auditors.**

- **The reliability of the audit is important. Auditors should be independent of the activities they audit. In other words, people cannot be asked to audit activities they have been working on, or the activities of their own department.**

What Should an EMS Audit Produce?

- An EMS audit should answer these questions:
- ***Is the environment management system complete?***
- ***Have objectives and targets been set?***
- ***Does the environment management programme cover all aspects of business activity?*** **In hospitality businesses this includes front and back office, food and beverage, kitchens, housekeeping, laundry, maintenance, banqueting, conference centre, visitor centre, retail outlets (pastry shops, gift shops etc), business centre, sports and leisure facilities, gardens, transport and administration.**

Stages of Environmental Management Systems 28

- **Is information on environment performance communicated to employees?**
- **Are there adequate procedures for corrective action?**
- **Are environment practices integrated into daily operations?**
- **Is environment performance being monitored and documented?**
- **Does there appear to be a commitment to continuous improvement?**
- **Is the environment management system well implemented?**

The best evidence of good implementation is the level of environment improvement. Other evidence can be found in resource and material use records, data sheets on waste and emissions, training instruction sheets, visitor comments, fi nes imposed, accident records, and equipment maintenance records.

- **Is the environment management system sufficient to achieve objectives and targets? The best evidence of this is the variance between actual environment performance and the set objectives and targets.**

Audit Procedures

The following audit procedures are based on the recommendations of ISO 14011:

- **Determine the objectives of the audit and which sites and activities are to be audited. This is especially important for larger businesses, where several offices and operating sites may need to be audited;**
- **Establish priority areas and issues of confidentiality;**
- **Start with an opening meeting at which the scope, objectives and procedure of the audit are confirmed and the necessary resources obtained;**

Stages of Environmental Management Systems 30

- **Carry out the audit in consultation of environment performance monitoring documents, interviews and site visits;**

- **Assess information quality – best done by comparing recorded performance data with results of interviews and observations made during site visits;**

- **Compile the findings into an audit report;**

- **Present the audit report to company management and the environment management team at a closing meeting.**

4.2 Reporting on Environment Performance

- A corporate environment report communicates to all stakeholders the company's environment performance over a given period.
- It is a key indicator of the business's environment commitment and an important tool for building dialogue and communication with local communities, legislators and non-government organisations.
- Corporate environment reports detail the results of the EMS.

Stages of Environmental Management Systems 32

- catalyse environment action across the company,
- validate the efforts of environment managers and increase support for environment improvement.
- The target audiences for information on corporate environment performance include employees, shareholders, legislators, customers, bankers, insurers, local communities, environment organisations, suppliers, trade and industry partners, and the public at large.

Stages of Environmental Management Systems 33

- Environment performance can be reported through a variety of methods –

  newsletter, press release, a section in the annual fi nancial report, or a stand-alone corporate environment report.
- National environment legislation has made such reporting mandatory for

-some industry sectors in Europe and North America.

-EU Management and Audit Scheme (EMAS).

-Over a hundred of the world's leading companies and over 600 smaller ones report on environment performance. Some report annually, others every 2 or 3 years with annual interim updates.

Stages of Environmental Management Systems 34

- Within the tourism and hospitality sector, companies reporting on environment performance are
- major airlines, passenger transport companies,
- hotel chains and
- the larger leisure and entertainment providers
-

Contents of a Corporate Environment Report

- A corporate environment report communicates the company's environment-related performance over a given period. It reports on the:

- **Environment policy;**
- **Objectives and targets;**
- **EMS implementation and results;**
- **Areas of environment performance which have improved or deteriorated;**
- **Objectives and targets realised;**
- **Compliance and fines;**
- **Accidents, emergency response, occupational illness;**
- **Environment improvement efforts in the local community and participation in industry networks and partnerships;**
- **EMS improvement plans for the future.**

Stages of Environmental Management Systems 36

-the environment report should be verified by an independent environment auditor

on the accuracy of the information contained

Such verification is a mandatory requirement of the

-EU EMAS regulation and

-an optional requirement of ISO 14001.

DEPARTMENT CHEKLISTS ON ENVIRONMENT MANAGEMENT 1

- The environment management programme was discussed under the action areas:

- water and wastewater,
- energy,
- waste,
- purchasing environmentally-preferable products,
- emissions,
- indoor air quality,
- noise,
- internal communication and training,
- visitor communication, and
- monitoring and documenting the progress of the environment management programme.

- These actions will now be resubmitted as department checklists.

DEPARTMENT CHEKLISTS ON ENVIRIONMENT MANAGEMENT 2

- **ENVIRONMENT MANAGEMENT CHECKLIST FOR ROOMS, HOUSEKEEPING AND FRONT OFFICE**

- **Train staff to use less hot water and electricity when cleaning;**
- **Use water-saving devices such as aerators, low-fl ush valves, low-flow showerheads, waterless urinals, toilet dams, etc;**
- **Avoid rinsing under running taps – use buckets or bowls instead;**
- **Run washing machines only when full;**
- **Place tent cards in rooms inviting guests to save water and energy;**
- **Use energy-saving 'fob' and 'link' controls;**
- **Fit energy-saving light-bulbs and translucent lampshades;**
- **Use hot/cold water mixes in all outlets;**
- **Avoid placing furniture in front of heaters and air-conditioners;**
- **Maintain hot water in taps at 50°C;**
- **Open and close curtains to maximise and minimise heat gain as required;**

DEPARTMENT CHEKLISTS ON ENVIRIONMENT MANAGEMENT 3

- • **Separate waste for recycling;**
- • **Purchase reusable, recyclable, less toxic, biodegradable and lightly packaged products;**
- • **Avoid individual toiletries – use bulk dispensers instead;**
- • **Avoid disposable products;**
- • **Reuse old linen, containers, and left-over guest stationary;**
- • **Train staff in environment-related actions and keep them informed about environment progress;**
- • **Co-operate with, and report repair needs to, engineering and maintenance departments;**
- • **Keep proper records of environment performance**

DEPARTMENT CHEKLISTS ON ENVIRIONMENT MANAGEMENT 4

- **ENVIRONMENT MANAGEMENT CHECKLIST FOR ADMINISTRATION, PURCHASING AND BACK OFFICE**

- **Train staff in water and energy conservation and waste reduction and separation;**
- **Separate waste;**
- **Keep abreast of environment news, including changes in legislation,mtariffs and charges;**
- **Switch off equipment and lights when not required;**
- **Use energy-saving lighting;**
- **Implement environmental purchasing policies;**
- **Give preference to environmentally certified products and those with less packaging;**
- **Give preference to stronger, longer-lasting products;**

DEPARTMENT CHEKLISTS ON ENVIRIONMENT MANAGEMENT 5

- **Invite suppliers to suggest environment-preferable alternatives;**
- **Make efforts to reduce paper and other office materials;**
- **Use energy-saving computers, copiers, fax machines etc;**
- **Recycle toner cartridges;**
- **Install individual thermostats on heaters and coolers;**
- **Co-operate with and report repair needs and malfunctions to engineering and maintenance departments;**
- **Communicate environment achievements to visitors, stakeholders, the local community and the wider public;**
- **Monitor resource use and waste output;**
- **Maintain records on environment performance.**

DEPARTMENT CHEKLISTS ON ENVIRIONMENT MANAGEMENT 6

- **ENVIRONMENT MANAGEMENT CHECKLIST FOR FOOD AND BEVERAGE AND KITCHENS**

- **Train staff in energy and water conservation;**
- **Separate waste, including organic waste, fats and oils;**
- **Replace old equipment with more energy-effi cient models;**
- **Defrost at room temperature, not in hot water;**
- **Avoid using ozone-depleting substances;**
- **Match pan size to burner size;**
- **Use biodegradable cleaning products;**
- **Install hot water mixers in all water outlets;**
- **Compost organic waste;**
- **Send food waste to pig farms;**
- **Fit grease traps on all effluent outlets;**

DEPARTMENT CHEKLISTS ON ENVIRIONMENT MANAGEMENT 7

- **Ensure all equipment is in good working order;**
- **Maintain sealing and stripping in cold rooms and refrigeration units;**
- **Invite suppliers to take back and reuse crates, pallets and other packaging;**
- **Minimise the use of disposable cutlery, crockery, and other such items;**
- **Highlight local specialities on menus;**
- **Buy in bulk and from local producers;**
- **Donate left-over food from buffets;**
- **Co-operate with and report repair needs and malfunctions to engineering and maintenance;**
- **Monitor resource use and waste output.**

DEPARTMENT CHEKLISTS ON ENVIRIONMENT MANAGEMENT 8

- **ENVIRONMENT MANAGEMENT CHECKLIST FOR GARDENS**

- **Water in the evening or early morning;**
- **Direct water flow directly to roots;**
- **Use drought-resistant, native plant species;**
- **Compost garden waste;**
- **Collect rainwater for watering;**
- **Avoid pesticides, insecticides and chemical fertilisers;**
- **Reduce lawn areas;**
- **Plant trees (including deciduous trees) to reduce heat gain during the summer and increase it during the winter;**
- **Install timers on outdoor lighting;**
- **Look into PV-powered outdoor lighting;**
- **Co-operate with engineering and maintenance on EMS.**

DEPARTMENT CHEKLISTS ON ENVIRIONMENT MANAGEMENT 9

- **ENVIRONMENT MANAGEMENT CHECKLIST FOR POOLS**

- **Ensure adequate fi ltration and turnover of water;**
- **Experiment with water purifi cation techniques other than chlorine;**
- **Maintain water temperature at around 29°C;**
- **Maintain indoor air temperature at the same temperature as, or slightly higher than, the pool water (up to 1°C);**
- **Maintain relative humidity at about 60%;**
- **A general guideline for ventilation for indoor pools is 4 to 6 changes of air per hour;**
- **Co-operate with engineering and maintenance on EMS.**

DEPARTMENT CHEKLISTS ON ENVIRIONMENT MANAGEMENT 10

ENVIRONMENT CHECKLIST FOR ENGINEERING AND MAINTENANCE

- **Maintain water supply and distribution networks;**
- **Maintain energy and hot water distribution networks;**
- **Review insulation over the property, including hot water pipes;**
- **Check feasibility of wastewater treatment and reuse on-site ;**
- **Look into automatic load-shedding systems;**
- **Install building management systems together with timers, TVRs, and thermostats on all equipment;**
- **Look into possibilities of heat recovery and CHP applications;**
- **Ensure energy and power controls are set according to levels of activity and climate considerations;**
- **Explore possibilities for the use of renewable energy sources onsite;**
- **Inquire into purchasing 'green' electricity generated from renewable energy sources;**

DEPARTMENT CHEKLISTS ON ENVIRIONMENT MANAGEMENT 11

- **Inquire into calibrated water supply systems;**
- **Install water-saving devices in all outlets;**
- **Ensure adequate changeover on indoor air;**
- **Ensure the good working order of all equipment;**
- **Ensure that fans, vents and fi lters are clean and in good condition;**
- **Provide for the safe storage and disposal of hazardous waste;**
- **Use non-halon fire extinguishers;**
- **Ensure all vehicles are in good working order;**
- **Work on the sub-metering of different areas of the property to improve in-house data accuracy;**
- **Eliminate ODSs in refrigeration and air-conditioning;**
- **Seal gaps in windows and door frames;**
- **Monitor water, fuel, power use and indoor air quality;**
- **Use environment-preferable building materials during refurbishment and renovation;**
- **Co-operate with other departments in EMS management and monitoring.**

1. Turtle Island, Yasawas, Fiji

- **The 500-acre Turtle Island, also known as Nanuya Levu, is part of the Yasawa Island group, a chain of small islands located approximately fifty miles northwest of one of the two main Fiji islands, Viti Levu.**
- **In 1972, Richard Evanson took over the over-grazed island and initiated an intense reforestation programme: over the past 25 years, Evanson has focused on reviving the island's fragile ecosystem by planting more than a quarter of a million trees and encouraging wildlife to re-establish itself.**
- **The island is now a luxury resort complete with secluded private beaches and fifteen thatched, hand-built Fijian-style beachside cottages (bures), and is home to 160 local inhabitants.**

CASE STUDIES ON EMS IN HOSPITALITY BUSINESSES 2

WATER

- **While the quality of the water on the Island is good, the quantity is limited. Guests are encouraged to save water wherever possible by having short showers and by not requiring their towels to be washed every day;**
- **Each bure is fitted with water saving showerheads;**
- **The three-acre, organic vegetable and herb garden depends on a drip-feed watering system rather than a spray watering one, which minimises mid-air evaporation;**
- **Waste water is treated through an on-site treatment facility. The waste water is first pumped into sceptic tanks, where preliminary sedimentation takes place (heavy particles are allowed to sink to the bottom). Waste water is then introduced to grass-covered leach fields.**
- **Residue sediment is dried and used as fertilizer for forestry.**

CASE STUDIES ON EMS IN HOSPITALITY BUSINESSES 3

ENERGY

- **Hot water is generated through solar hot water panels, situated on the roofs of all relevant buildings. Each bure has its own hot water panel, as does the kitchen, laundry and administration area;**
- **Outdoor photovoltaic lighting is used to light paths and walkways at night;**
- **All bures are fitted with low voltage lights;**
- **The drying room is heated by a co-generation unit which operates on waste heat generated by the resort's diesel generators. The drying room is located next to the diesel generator and receives warm air from the generator's radiator through a 60 centimetre square, sheet metal duct. The air escapes through the roof or the door at the end of the drying room, thereby preventing heat build-up. The drying room provides enough space to dry about 200 sheets at any one time. Harnessing this otherwise wasted energy is estimated to save AUS$5000 a year on energy costs.**

CASE STUDIES ON EMS IN HOSPITALITY BUSINESSES 4

WASTE

• Solid waste is separated into type – petroleum-based waste, metals, glass, plastics, organic kitchen waste and plant cuttings – at the time of disposal;

• Hazardous materials, such as batteries, are shipped to the mainland for recycling;

• All plant waste is fed into a high-powered chipper to create compost. This is stored in large heaps to enable bacteria to heat the compost and increase the rate at which it is converted to useful organic humus. This takes about seven months. The compost is then used as a soil enhancement in tree planting around the island and in the vegetable garden.

MONITORING

- **Turtle Island has commissioned a full Environmental Audit, which not only reports on what the Island is doing, but also makes recommendations as to how improvements can be made to environmental conduct. Regular updates to the original Audit act as benchmarks for assessing every new project undertaken, and many of the recommendations have now been implemented and absorbed into the daily life on the Island.**

TRAINING AND MOTIVATING EMPLOYEES

- **Environmental awareness programmes and training are constantly being developed to ensure that all staff understand the importance of their surroundings;**
- **Environmental meetings take place on a daily basis, and a scheme to award those staff who show the greatest initiative in regard to**

environmental conduct is currently being implemented.

COMMUNICATION

- **Guests are exposed to the Turtle's ecological activities even before setting foot on the Island though the resort's promotional material, and in most cases, arrive keen to learn more about their role in preserving the environment. Accordingly, they are offered a tour of the island's ecological zones and are encouraged to read the Environmental Audit,a copy of which is displayed in each bure.**

COMMUNITY ACTION

- **The Turtle Island Community Foundation, a trust fund that goes towards the health, education and transportation for the local population, has been established;**
- **In 1990, a healthcare foundation for those who otherwise would not have had access to modern medicines, was established. Each year since, Turtle Island has hosted an eye clinic. A dental clinic and dermatology clinic have been set up in the same way, and there are plans to extend the eye clinic to other South Pacifi c islands and even to construct a permanent, state of the art hospital on the island in 2001/2.**

CASE STUDIES ON EMS IN HOSPITALITY BUSINESSES 8

2. The Orchid Hotel, Mumbai, India

DESIGN

- **The 245-room, fi ve star, ECOTEL-certifi ed Orchid Hotel was designed from the outset with preservation of the environment in mind. Amongst the environmentally-preferable building materials used were fertilizer waste5, bricks containing 60% fl y ash (a waste product of the power generation process from coal fi red power plants), redundant rubber wood or medium density fi bre wood (MDF).**

- **Windows are triple glazed which prevents the sun's heat from entering and helps to conserve energy generated from air-conditioning: The refl ective outer glass reduces heat load by 15 percent. The atrium provides natural lighting to the reception and lobby.**

CASE STUDIES ON EMS IN HOSPITALITY BUSINESSES 9

WATER

- **Flow restrictors, low-flow showerheads and aerators have been installed in all guestrooms. Aerators reduce water usage from 200 litres per shower to 110 litres per shower, by restricting water flow;**
- **All rooms have been fitted with concealed cisterns which use only six litres of water per flush, as opposed to 15 – 20 litres used by conventional systems;**
- **Taps in the back of house are on timers;**

These measures have collectively reduced annual water use from 782.6 litres per available room to 614.3 litres. Water savings as a result of using the aerators alone produce savings of U$1,790 per year.

ENERGY

- **Energy-efficient lamps are used, which provide as much light as ordinary bulbs, yet consume substantially less energy. A 10 Watt lamp is as bright as a 60 Watt incandescent bulb, yet the power consumption of the lamp is only 25 percent of that of an ordinary bulb. Room lights only come on when a key card is inserted;**

CASE STUDIES ON EMS IN HOSPITALITY BUSINESSES 10

• Mini-bars in guest rooms save up to 40 percent energy as they are equipped with 'fuzzy logic' which senses the load inside the refrigerator and cools it accordingly;
• Photovoltaic lighting is used for lighting the outdoor terrace;
• A master control panel, incorporating a unique feature, known as the 'green button', is installed in each guest room. On pressing this button, the thermostat of the air-conditioning unit is turned up by 2 degrees. The saving in electricity resulting from this 2 degrees increase in temperature is converted into rupees and displayed on guest folio. This money is then used for funding NGOs and environment-related programmes on a long term basis. Additionally, a certifi cate is issued to the guest who has voluntarily participated in conserving energy, and they are later informed by direct mail of the hotel's ongoing environmental activities.

Total savings per year in heat, light, power and guest amenities costs have reached US$152,471. Energy savings per available room are now 10 – 15 percent.

CASE STUDIES ON EMS IN HOSPITALITY BUSINESSES 11

WASTE

- **Virtually all in-room products are reusable or recyclable. For example, hangars are made from recycled sawdust and items such as pens and tissue boxes are made from chlorine-free cardboard and fi bre wood respectively;**
- **Paper usage is kept to a minimum: Laundry is returned in reusable cloth laundry bags, newspapers are delivered on request in reusable cane baskets and no 'Do Not Disturb' or 'Make Up the Room' signs are used;**
- **Kitchen waste is treated in on-site vermiculture pits, which breaks down waste into compost;**
- **Waste water generated from the hotel amounts to approximately 120 kl per day. 90 – 95 kl of grey water is recycled at the on-site wastewater treatment plant, 30 kl of which is then used for gardening and air conditioning purposes.**
- **Total savings in water purchasing costs per year have reached US$13,440.**

SUPPLIERS

- **Preference is given to Indian-manufactured products and materials;**
- **Incoming packaging material has been reduced by 30%;**
- **Suppliers are regularly screened to ensure they fulfi l the hotel's stringent environmental criteria;**
- **All suppliers must deliver goods in reusable and returnable crates;**
- **Suppliers are encouraged to offer their own innovative suggestions as to how packaging can be reduced.**

TRAINING AND MOTIVATING EMPLOYEES

- **Employees undergo a thorough environmental induction programme, with monthly refresher courses to ensure their conduct conforms to the hotel's eco-sensitive culture;**
- **Regular newsletters and site inspections also ensure staff are both informed of and behave according to the organisation's environmental policies.**

COMMUNICATION

- **Internal environmental performance is communicated to staff through internal e-mail and notice boards;**
- **Guests are kept informed of environmental activities through a direct mailing system;**
- **The hotel spreads its environmental message externally through newsletters, electronic media, the organisation of conferences and seminars and by regularly reporting to its certifying body, ECOTEL;**
- **Staff also participate in events like World Environment Day and World Anti-Smoking Day through activities such as 'clean up drive', 'no plastic bag' and 'pollution under control' campaigns.**

CONTRIBUTIONS TO THE LOCAL COMMUNITY

- **In addition to training 140 temporary trainees and 71 apprentices, the hotel has created 430 new job opportunities for Indians living in and around the city of Mumbai;**
- **Prior to The Orchid's opening, there were no local suppliers who manufactured or traded eco-friendly products. Today, the hotel's persistence in educating, informing and negotiating with suppliers has resulted in the development of a fully-fl edged industry supplying such products. This has generated further job opportunities within the local community;**
- **The Orchid promotes local culture and crafts wherever possible. Many guest supplies, for example, are produced by the local cottage industry, which has created employment opportunities for local craftspeople.**

CORE CONCEPTS OF ENVIRONMENT MANAGEMENT

1 cleaner production,
2 eco-efficiency,
3 industrial ecology and
4 life-cycle assessment,

1 Cleaner Production

- ***CLEANER PRODUCTION AIMS TO AVOID THE GENERATION OF WASTE AND POLLUTION IN THE FI RST PLACE***.

Strategies for cleaner production include:

- **Reducing the use of raw materials and energy;**
- **Reducing the use of toxic raw materials;**
- **Reducing toxic waste output;**
- **Reducing environment impacts during the lifecycle of products and services – from raw material extraction to manufacturing, production, storage, distribution, consumption and recycling and/or final disposal.**

THE CORE CONCEPTS OF ENVIRONMENT MANAGEMENT 3

In economic terms, cleaner production means

- reducing material and energy use and related costs,
- auditing, adopting more efficient production processes,
- lowering waste volumes and disposal costs,
- eliminating clean-up costs, fines and charges, and
- producing higher quality goods and services.

THE CORE CONCEPTS OF ENVIRONMENT MANAGEMENT

- *Cleaner production is the continuous application of integrated preventive strategies applied to processes, products and services to increase efficiency and reduce risks to humans and the environment. (UNEP DTIE 1996)*

2 Eco-Efficiency

- Eco-efficiency is about doing more with less –
- using the same or a lesser amount of materials and energy to deliver a higher quality or quantity of goods and services.

The World Business Council for Sustainable Development (WBCSD) provides the following definition:

- *Eco-efficiency is reached by the delivery of competitively priced goods and services that satisfy human needs and bring quality to life, which progressively reduces ecological impacts and resource intensity throughout the life cycle, to a level that is at least in line with the earth's carrying capacity.*

3 Industrial Ecology (Systems Thinking)

- Industrial ecology refers to business operations that mimic (imitate) the natural ecosystem, where an industrial system is managed like an ecosystem - a continuous and sequential flow of materials, energy and information.

The two major concepts of industrial ecology are

1 sealing the material cycle and

2 de-materialisation:

1 Sealing the material cycle means carrying out production in closed circuits, in the same way as an ecosystem. For example, through photosynthesis plants produce carbohydrates.

- **These feed herbivores, which then fall prey to carnivores, whose waste is, in turn, food for detritus organisms.**
- **Similarly, industries could reuse waste as raw material and reuse or recycle end products after they have been consumed.**
- **In this way materials and waste would move round in closed circuits.**

2 Ecosystems have built-in methods for optimising the use of materials and energy. Similarly, dematerialisation is about doing more with less:

- **optimising the use of raw materials and extending the service life of end products. An additional benefit in extending service life is that it creates new job opportunities, especially in maintenance and repair.**

Industrial Ecology in Practice

One of the best examples of industrial ecology in practice is the case of the Danish town Kalundborg.

Kalundborg has four main industries:

- **Asnaes Power Station, a coal-fi red plant;**
- **Novo Nordisk, producing enzymes and pharmaceuticals;**
- **Gyproc, a plasterboard manufacturer;**
- **Statoil, an oil refinery.**

THE CORE CONCEPTS OF ENVIRONMENT MANAGEMENT 9

- *The evolving industrial ecosystem works as follows:*

- **Asnaes produces steam and heat while generating electricity, and sends some of its steam to Statoil and Novo Nordisk.**
- **Statoil, which gets 40% of its steam requirements from Asnaes, uses the steam to heat pipes and tanks.**
- **Novo Nordisk gets 100% of the steam it needs from Asnaes, and uses it as a source of heat and pressure.**

- **Asnaes also pipes excess heat to local fish farms and some homes.**

- **Plans are underway to expand this to all homes in Kalundborg by 2005.**
- **This process of heat and steam recycling has raised the effi ciency of coal burning from 40% to over 90%.**

THE CORE CONCEPTS OF ENVIRONMENT MANAGEMENT 10

- **Asnaes' waste steam and the by-product gypsum (produced in the scrubbers which reduces sulphur dioxide emissions) are used by**

- **Gyproc to make plasterboard. The remaining gypsum is sent to local cement producers.**

- **At the Statoil Refinery, flue gas is created as a by-product of oil refi ning. The gas first goes through a de-sulphurisation process. The hot, liquid sulphur captured is sold to the Kemira Acid Plant in Jutland.**
- **Statoil's sulphur-free fl ue gas goes to Asnaes and Gyproc, instead of being burned off.**
- **Asnaes thus saves 30,000 tonnes of coal a year.**
- **Statoil's fl ue gas meets nearly 95% of Gyproc's gas needs.**

- **Novo Nordisk gives its nitrogen-rich sludge to local farmers via pipeline or truck. This is reported to save each farmer about US$50,000 a year in fertiliser costs.**

- **This evolving symbiotic scheme is also being extended to water use.**

4 Life Cycle Assessment

- Life Cycle Assessment (LCA) is a method of assessing the environment impacts of a product or service during its life cycle – extraction, processing, manufacturing, transport and distribution, consumption, maintenance, reuse and recycling, and final disposal.
- It is a quantitative and scientific analysis, designed to generate objective information about environment impacts. Economic and social issues only enter the picture once the scientific analysis is complete.

LCA can be used to:

- **Develop new products and services;**
- **Improve manufacturing/service delivery;**
- **Provide consumers with credible information on the environment aspects of products/services;**
- **Develop environment-preferable purchasing policies;**
- **Improve the quality of existing products and services.**

Specialised life cycle analysis software, together with methodology improvements and increased data availability, is making LCA easier to carry out.

THE CORE CONCEPTS OF ENVIRONMENT MANAGEMENT 13

LCA methodology consists of four main stages

1. DEFINITION OF THE SCOPE OF THE LCA

Questions arising at this stage include:

- **What will the results of the LCA be used for?**
- **What aspects and functions of the product or service must be taken into account?**

2. INVENTORY ANALYSIS

A detailed inventory of:

- **All inputs (land, energy, water, and raw materials used);**
- **All outputs (waste, emissions and by-products) is developed and quantified for each process. This information is then developed into a process flow chart.**

3. IMPACT ASSESSMENT

- **• The checklist and flow chart are quantified into a number of selected**
- **impact categories;**
- **• These are then weighted in importance.**

4. IMPROVEMENT ASSESSMENT

- **All opportunities to reduce impacts are systematically evaluated.**

Case Study: The LCA of a Vending Machine

An LCA was conducted on a fully automated hot drink dispensing machine for tea, coffee and chocolate. The LCA findings showed that:

- **The energy consumption was highest for the production and transport of the ingredients and for the use and servicing of the machine;**
- **70% of the energy used during the lifetime of the machine was to maintain it on stand-by;**
- **The majority of waste and emissions came from the use and servicing of the machine;**
- **The material input for the ingredients (tea, coffee, chocolate, hot water, milk, and sugar) was 10 times greater than the material input in the manufacture of the dispensing machine.**

These findings were used to implement the following improvements:

- **The ingredients in the machines were replaced with more environmentally-preferable alternatives;**
- **The ingredient containers were enlarged;**
- **Daily servicing was reduced to weekly servicing;**
- **The hot water tank was insulated.**

Ingredient and energy use was reduced by over 10%. As servicing costs were also substantially reduced, the price of the hot drinks dispensed could be lowered.

SUSTAINABLE DESIGN

What is Sustainable Design?

- Sustainable design involves buildings that need fewer resources and materials to build, occupy and maintain, and are more comfortable and healthy to live and work in.
- 'Sustainable design is not a new building style. Instead, it represents a revolution in how we think about, design, construct and operate buildings. Sustainable design aims to lessen the harm caused by poorly designed buildings by using the best of ancient building approaches in a logical combination with the best of new technological advances. Its ultimate goal is to go even further and build of. ces, homes, even entire subdivisions, that are net producers of energy, food, clean water and air, beauty and healthy human and biological communities.'
- The Rocky Mountain Institute, USA

SUSTAINABLE DESIGN 2

- Buildings have significant impacts on the environment. In most industrialised countries, carbon-dioxide emissions from buildings account for half of total national carbon emissions, while construction waste amounts to 35-40% of national annual waste output. In the UK, each person uses over 6,000kg of building materials every year.

- The 1960s was the most notorious era for the construction of uneconomical and uncomfortable buildings which, as described by the celebrated architect Lewis Mumford, can “only be inhabited with the aid of the most expensive devices of heating and refrigeration.” Admittedly, modern buildings are much more resource- and energy-efficient than those built 30 years ago, but they are still far from sustainable, and continue to be designed with little regard for climate, improved comfort, or reduction of water, energy and waste during construction and occupation.

SUSTAINABLE DESIGN 3

We all pay the costs of unsustainable buildings.

- Employees working in badly ventilated and illuminated offices perform poorly and register high levels of occupational illness.
- Companies and home owners face rising bills for heating damp, draughty buildings. Multiplier effects go even further – tropical forests are logged to provide timber for buildings in Europe, Japan and North America, and
- large rivers are being dammed to generate hydro-electricity for energy-intensive homes, business and other sites.

WHY SUSTAINABLE DESIGN IS IMPORTANT FOR TOURISM INDUSTRY

- The tourism industry, notorious for erecting buildings that ruin the beauty and integrity of their surroundings, ironically spends around US$701 billion a year on capital investments, which include hospitality businesses, airports, visitor centres and offices.

- With the expansion of the nature, adventure and rural tourism markets, more and more structures are being built in remote and fragile environments where it is vital that impacts be kept to a minimum.

WHY SUSTAINABLE DESIGN IS IMPORTANT FOR TOURISM INDUSTRY 2

- Tourism buildings, due to the intensity of use, need to be regularly repaired and refurbished, which involves further impacts.

- Tourists are also responding to good design. According to a 1996 study by the Travel Industry Association of America, some 43 million Americans are willing to pay an 8.5% premium to stay in what they perceive to be a environmentally sensitive property.

THE BENEFITS OF SUSTAINABLE DESIGN

BENEFITS

1 FACILITATES ENVIRONMENT MANAGEMENT

2 LOWER ENERGY USE

3 PEOPLE PREFER ‘GREEN’

4 IMPROVES PRODUCTIVITY AND ENHANCES CORPORATE IMAGE

THE BENEFITS OF SUSTAINABLE DESIGN 2

1 FACILITATES ENVIRONMENT MANAGEMENT

- **Sustainable design greatly facilitates the implementation of EMS.**
- **Some of the greatest challenges for EMS are finding ways to reduce resource use and waste output in buildings that offer very little scope for low and medium cost improvements. But a building constructed to maximise day lighting, lower heat loss or gain, use renewable energy, provide plumbing for the reuse of grey water, and lower watering needs through thoughtful landscaping, makes the implementation of EMS much easier.**

2 LOWER ENERGY USE

- **As discussed in Unit 4, repair and retrofi t options can reduce energy consumption by 30-50% in most buildings. This can be increased to 80% if coupled with sustainable design features.**

3 PEOPLE PREFER ‘GREEN’

- **There is an increasing demand for airy, comfortable homes and offices in neighbourhoods with open spaces, parks, trees and greenery.**
- **Sustainable design demonstration projects show that people are willing to pay a premium for ‘green’ homes and buildings.**

4 IMPROVES PRODUCTIVITY AND ENHANCES CORPORATE IMAGE

- **Improving employee productivity is a strong incentive for ‘green’ offices. As salaries account for the highest proportion of operating costs, the business benefi ts of increased productivity can make a substantial contribution towards offsetting payback periods for building improvements. ‘Green’ buildings can also improve corporate image.**

THE BENEFITS OF SUSTAINABLE DESIGN 6

Sustainable design results in durable, attractive buildings, reduced operating and maintenance costs, improved comfort and convenience and low environment impact.

- Source: IH&RA AND euhofa (2001) Sowing the seeds of change : An environmental Teaching Pack For The Hospitality Industr. IPP, Nemours,France.

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