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## PREFACE

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*In this course, we shall deal with various aspects of Eco Tourism, Eco System and Tourism Development, Pollution and its control, Effects of Tourism on the Eco System, National Policy on Ecology & Ecotourism around the World.*

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The block consists of the following units:

- Introduction to Ecology and Environment for Tourism
- Eco-Tourism linkages.
- Eco System and Tourism Development
- Pollution and its Types
- Measures to Control Pollution
- Effects of Tourism on the Eco System
- Ecotourism in India
- National Policy on Ecology and Environment
- Ecotourism around the World

The first unit of this block deals with the: - *Introduction, Importance of the study of Ecology and Environment for Tourism, Hierarchical levels of organization, Eco system processes (Ecosystem) Functions-non-monetary values).*

The second unit of this block deals with the: - *Introduction, Linkages between Ecology, Environment and tourism activities, Eco Tourism (ET, Guidelines, Eco cultural tourism (ECT), Water sports,*

The third unit of this block deals with the: - *Introduction, Principles of development, Eco development 4 Community Development, Site Development.*

The fourth unit of this block deals with the: - *Environmental Pollution, Air Pollution, Water Pollution Solid wastes.*

The fifth unit of this block deals with the: - *Introduction, Conservation of Forests and Wildlife, Sustainable use of land and water, Tropical deforestation.*

The sixth unit of this block deals with the: - *Introduction, Environment Impacts of Tourism, Environment Degradation, Benefits from Eco tourism financial contribution.*

The seventh unit of this block deals with the: - Ecotourism in India, Policy and Planning, Joint Forest Management and Eco development.

The Eighth unit of this block deals with the: - National Policy on Ecology and Environment, The Indian Scenario, Coastal Area Management, Preparation and Issuance of Notifications and Amendments.

The Ninth unit of this block deals with the: - Ecotourism around the World, Global Trends in Ecotourism, World Heritage Sites, The World Bank

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## UNIT: 1

### LESSON – 1

#### INTRODUCTION

The term **Ecology** was first coined by Reiter (1868) and defined by a German Scientist Ernest Haeckel (1869). It has been derived from two Greek words namely, 'oikos' meaning home or estate and '**logos**' meaning study: Literally it means the study of the home or household of nature. The term **Economics** is also derived from the same root 'oikos' meaning management of the household. Ecology, then, could be considered as the Economics of nature.

Smith (1936) defines **Ecology** as a 'study of structure and function of nature'<sup>1</sup>. The structure includes the distribution and abundance of organisms as influenced by the biotic and abiotic elements of environment and function includes all aspects of growth and interactions of populations, including competition, predation, parasitism, mutualism and transfer of nutrients and energy among them.

The environment of an organism is composed of all the factors and phenomena outside the organism that influence it. Environmental science is the study of how we and other species interact with one another and with the nonliving environment of matter and energy.

It is a study of how everything works and interacts - a study of connections in the common home of all living things. This integrative approach will produce a new generation of scientists that are both sensitive to the intrinsic value and inherent worth of the natural environment and responsive to the fact that science and technology should be used for nature's sake and not simply as a means to exploit nature for society's continued use.

#### **Importance of the study of Ecology and Environment for Tourism**

Though tourism is India's one of the largest foreign exchange earners and one among the fastest growing industries, the natural resource base, which supports tourism, is "heavily stressed" in and around the main tourist destination areas. Changes in the physical, spatial, and socio-economic structure of a tourist area as well as the existence of several burdensome, environmental problems testify to the presence of these conflicts.

Tourism is a multi-faceted phenomenon, cutting across several sectors. There are geographical, social-economic, ecological/environmental and psychological aspects of tourism. Among these, the ecological/environmental dimension of tourism is the most important and vital link for the survival of the tourism industry itself, since the industry cannot survive without protecting the ecology of the tourism destination areas. The emerging tourism scenarios in both the first and third world countries have clearly indicated the vital importance of the ecology of the tourism destination areas and their environmental qualities in determining the quality of the tourism products. Thus, they have come to occupy a leading position in the tourism policies and planning.

There have been very few attempts to study Ecology in an integrated manner. Tourism offers this unique opportunity as well as a challenge to ecologists as tourism activities influence the structure and function of nature, either positively or negatively. The success of the tourism industry ultimately depends upon habitats, which are diverse (both habitat and species diversity), rich in natural resources, and relatively free from degradation/pollution. Hence, tourism policy makers and managers have to understand the basic principles of ecology and environment to evolve long-term sustainable tourism strategies.

### **1.3. Hierarchical levels of organization**

Ecology deals with four hierarchical levels of organization; the individual organism (plant, animal or microbe - usually identified as a species), the population (composed of the individuals of the same species), community (interacting collection of species found in a common environment of habitat) and, ecosystems, (community of different species interacting with each other and with the physical and chemical factors making up the non-living environment).

A **species** is a group of organisms that resemble each other in appearance, behavior, chemical make-up and processes and genetic structure. The individuals of a species can interbreed and produce fertile offspring's. Organisms that reproduce sexually are classified as members of the same species only if they can actually or potentially interbreed with one another and produce fertile off springs. Homo sapiens (human beings) are just one species with a unique ecology i.e. on the one hand, it has the dubious distinction as the most serious degrader of our natural resources and ecosystems and on the other hand has the ability to evolve management strategies for the same.

The distribution of species within a community shows two main characteristics: **species richness** (the number of species) and **evenness**, (relative abundance of individuals among the species). The more equitable the distribution, the greater is the evenness. **Species diversity**, which considers both the species richness and evenness, increases as the numbers of individuals in the total population are more equitably distributed among the species. Local diversity reflects and is influenced by regional diversity that is the product of climatic history, historical accidents, and geographical position of **dispersal barriers**. Dispersal is the spreading of individuals (often parents and off springs) and it may involve active or passive movements. **Migrations** (mass directional movements of large number of species from one location to another) can also alter the biodiversity.

**Habitat** is the place where plants, animals and microbial communities live and interact. Some writers have used 'habitat' and 'environment'<sup>1</sup> synonymously. The overall habitat of a community is the **macro habitat**. This is divided into **microhabitats**, that part of the general habitat utilized by an organism. For example, we may consider the macro habitat of a tropical rain forest and the microhabitats of the stream invertebrate communities. The latter can be found attached to the aquatic plants or any fallen twigs or logs or beneath the stones.

**Microclimate** refers to the climate on a very local scale that differs from the general climate of the area and influences the presence and distribution of organisms. From tourism point of view, this concept is very important" e.g. the microclimate determines the distribution and abundance of wildlife and comfortable climate for the tourists,

**A community** is something that has quite different significance to different groups of organisms - a fish's eye view of a community would be quite different from that of a whale in marine habitat or a tiger in the terrestrial habitat. Hence, the term community has scale other than what we impose on it. We look at the world through human eyes and adopt scales that happen to be appropriate for our own species. Only rarely communities are separated by clear sharp boundaries. This is because in most situations, adjacent communities inter grade with each other e.g. existence of amphibian (animals which are capable of living in both aquatic and terrestrial ecosystems) community between terrestrial and aquatic habitats. Some communities are more sharply defined than others.

Plants, animals and human beings live in association with a wide variety of other plants and animals. These communities of organisms are not mere collections/assemblages of individuals or populations but they represent a highly ordered dynamic and complex organization. Such complex natural organization with their living and non-living environments that control them and from which the living organisms derive their sustenance are called as "**Ecosystem**" or an "**Ecological system**". Thus ecosystems are communities of interacting organisms and the physical environment in which they live. The term was coined by Sir Arthur Tansley in 1935.

Ecosystems are conceptual models and these models can be applied at any scale, from a bowl of water to the whole earth. Ecosystems represent enormous contrast in size and complexity. For the purpose of study, an Ecosystem can be delineated in almost any way convenient to the interest of the investigator - river or pond, distinct boundaries can be recognized but in the case other ecosystems, such as grassland, forest, village or town, boundaries are not so sharp. However, they can be delineated according to the object of study or any other practical consideration. A combination of similar natural and geographical attributes is called as **Eco region**. E.g. Cauvery Delta, Western Ghats. An area with similar biological communities is called a **Bioregion**

Ecosystem is basically an energy processing and nutrient regenerating system. The sums of their components are greater than, their parts due to synergisms and mutualisms. The interaction between living organisms and their environment is very much a two

way process: organisms affect and are in turn affected by their surroundings. These dynamically balanced systems, can be of many sizes and types with which we are very familiar-such as forests, grass lands, deserts, ponds, lakes, rivers., streams, estuaries, tidal pools and oceans, We can, even consider artificial structures as ecosystems e.g. abandoned stone quarries and surface mines filled with water and containers of various sizes and shapes filled with water. Besides, there are other man made ecosystems such as. agro-ecosystems, monoculture, tree plantations, zoological parks, terraria and oceanaria. The complexity of the ecosystems in terms of species diversity increases, as one moves from higher latitudes towards the equator. Many ecosystems coupled together sustain the larger, complex and intricately interlinked global ecosystem-the ecosphere. The concept of this interacting system has proved extremely valuable and the ecosystem is regarded as a functional unit of nature and a basic unit for ecological studies. Ecosystems can be studied using modeling.

Ecosystems provide us with the following essential goods/materials and services/functions;

**Eco system processes (Ecosystem functions - non-monetary values)**

- Hydrologic flux and storage
- Biological productivity
- Biogeochemical cycling & storage
- Decomposition and Maintenance of Biodiversity

**Ecosystem goods (monetary values)**

- Food, fuel, fodder & fertilizer
- Construction materials
- Medicinal plants.
- Wild genes
- Tourism and recreation

**Ecosystem services**

- Maintaining BGC (water & nutrients) cycles → soil vegetal cover

- Generating and maintaining soil: → soil biota
- Pollination
- Regulating climate → plant communities
- Cleaning water and air → plant communities
- Detoxification
- Providing beauty and inspiration

Until recently ecosystem services were assumed to be inexhaustible, indestructible, and because they had no apparent costs without value. We are coming to realize, however, that growing demands on the natural environment can no longer be met by tapping unexploited resources, because they are becoming short in supply. These services are not only critical to the bare-bones survival of life, they are essential to the economic and technological functions that underlie modern civilization. Whether it is production or consumption, or whether it is exchange, the goods/commodities and services that are involved can be traced to constituents provided by nature. Tourism is no exception to this general rule.

### **Five basic laws of ecology**

Barry Commoner, the author of the book "**The closing circle**", proposes the following four basic laws of ecology:

1. Everything including humans and non-humans is interconnected, interdependent, and interactive and intermingled with everything else.
2. Every human activity will pollute the surroundings.
3. There is no such thing as a free utilization of resources
4. Nature has the capacity to heal/repair itself within limits.
5. Nature is more complex than we can know

These five basic laws of ecology are important for dealing with any aspect of development, leave alone tourism.

### **Basic properties of ecosystems**

Any level of human activity starting from that of hunter-gatherers to that of high-tech human society is bound to produce some impacts on the ecosystem. Hence the adage "development without destruction" can be considered as a misnomer. However, any natural resource or ecosystem has the ability to withstand such negative impacts, provided they are controlled within reasonable limits. These limits are defined by the basic ecosystem properties like absorbing capacity, carrying capacity, stability, resistance, resilience, dynamics, sustainability, and integrity.

### **Absorbing capacity**

Absorbing capacity of the ecosystem is defined as a capacity of the ecosystem to withstand the negative environmental impacts mostly in the form of degradation / pollution without any major effects on the ecosystem yield. There are a few organisms which can tolerate the degradation / pollution (e.g. Chironomous larvae) and there are some other organisms which can detoxify the pollutants generated by human activities (e.g. some plants such as water hyacinth and certain microbes). However, they can function only within certain limits.

The absorbing capacity make the earth regenerative; the living organisms (plants, -animals and microbes) absorb, recycle and regenerate the organic wastes and to some extent the inorganic wastes, thus maintaining the life support systems. Thus, absorbing capacity is one of the important ecosystem properties for tourism planning, especially in environmentally fragile areas such as mountains, island / coastal ecosystems, which incidentally draw a large number of tourists.

### **Carrying Capacity (CC)**

While human population increases in geometric., progression (2,4,16,256,...), the food production increases only in arithmetics-progression (2,4,8,16,...)- Besides, the availability of the non-renewable resources and the absorbing capacity of the ecosystem are finite and put limits on population growth. The factors, which put such limits on the prodigality of reproduction-and survival of off springs, are collectively called as "**environmental resistance**", The population size; is basically regulated by density dependent (biological factors more important in relatively stable physical conditions) and density independent (non biological factors - becomes important when there are violent, physical changes)

factors. The maximum size at which a population can be permanently supported without any major detrimental impacts on the ecosystem is called carrying capacity. In reality, however, we tend to import goods from other regions within the State or country or even from other countries, if needed. The unbounded area outside the country required to sustain the population within the boundary of the country (both permanent and floating populations) is called **Ghost acreage**. For instance, Japan, Taiwan and USA have higher Ghost acreage in other countries to meet their escalating demands.

In the context of tourism, CC can be defined as the maximum level of visitor use an area can accommodate with higher level of satisfaction for visitors with minimum negative impacts on resources and ecosystems or without causing major detrimental/irreversible impacts/reduction in the quality/quantity of the yield.

All types of resources (physical, chemical, biological, technological, institutional, cultural and Economic) are finite both today as well as their future potential for expansion. The currently exploding human population and the increasing Economic growth rates and the associated increasing human needs and wants exert pressure on CC, by stretching the productive, absorptive and recuperative capacities of the earth.

Carrying capacity is a two-dimensional concept involving number of users and intensity of per capita use. The number of individuals of a species that can be supported by an ecosystem depends on the quantity of resources that each individual of that species uses. In the case of humans, the quantity varies tremendously. Because of this variability, the resources required to support each person varies greatly. The higher the standard of living, the greater the resources required from the system on which an individual is dependent. This concept has important implications for the tourism sector, for two reasons viz., seasonality in tourism and the higher demands of the tourist's for natural resources (water, energy, processed food, etc.).

Currently, the concept of limits on CC still holds good, but as the size of the population approaches the limit/threshold, social, Economic and *technological* innovations are *stimulated to relieve* the pressure so that the limits are extended; thus, CC is not

a static concept. It is dynamic and more so for human societies; for instance, the carrying capacity of the early human societies like that of hunter-gatherers is much lower than that of modern high-tech human societies. However, still there are limits due to the physical (e.g. Space, crowding, water,) and biological (e.g. absorbing capacity, food production) limits of the ecosystem. CC is also dynamic in natural or artificial systems based on the level of degradation and human impacts.

### **Resistance and Resilience**

Community equilibrium or stability can be visualized in two ways: resistance and resilience. Resistance is the ability of a system to withstand or resist variations. It is measured by the degree to which the system is changed from an equilibrium state following a disturbance. Communities most resistant to change characteristically have a large biotic structure e.g. forest tree communities. Resilience is the speed with which a disturbed system returns to equilibrium or the same general state after being changed. A rapid return is evidence of high resilience and a slow return indicates low resilience, e.g. if the forest is highly disturbed by fire or logging, its return to the original condition is slow. Thus, the system exhibits low resilience, which is the inverse of resistance. Aquatic ecosystem, which lack any long-term storage of energy and nutrients in biomass exhibit little resistance but are highly resilient. For e.g. frequent floods can displace stream invertebrates and create vacant niches. Subsequently, these are recolonised by another set of organisms, which may be different, but the stream returns to its original conditions.

### **Ecological stability/ Balance**

Ecological stability / balance refers to the response of the ecosystem to return to its original status after a disturbance. The magnitude and frequency of disturbance is a factor which determines ecosystem structure and is a natural feature of many ecosystems, a prime cause of many spatial / temporal patterns of species distributions. The stability may depend upon the frequency of these changes and the time marked by the interactions between its component species. A system is said to be stable if it resists being deflected by some external factor or returns to its original state after being deflected.

Stability can be classified according to the nature of the original status of an individual / population / community / ecosystem.

The term homeostasis refers to the capacity of the system to return to the original state after disturbance; stability has two major components: inertial stability - the maximum size of the disturbance that a system can withstand before being deflected (also called resistance) and adjustment stability - the characteristics of the return to equilibrium.

The latter is further sub-divided into elasticity (the speed of return to equilibrium) and amplitude (the maximum deflection from equilibrium which still allows the system to return to its original state)

The term homeorhesis refers to the capacity of the system to return to an original trajectory or rate of change after disturbance, but equilibrium is never reached.

According to many recent works, there is no such thing as perfect ecological balance in nature because nature is always changing, even without human influence. From tourism point of view, it is thus important to realize the rate at which such changes are taking place in the ecosystems and how various tourism activities can influence such changes either positively or negatively. As in the case of species extinctions, (manmade extinctions are more than the natural extinctions in the recent past), man-made changes in the ecosystem have greater influence on the ecological stability.

### **Ecosystem dynamics**

Ecosystems are inherently dynamic and can change in time and space. They do not exhibit single points of stable equilibrium, but have a multitude of steady states across space and time. Thus, our sense of integrity must recognize the ability of an ecosystem to attain and maintain its optimum operating point. Hence, the concept of ecosystem integrity is value laden. An essential paradox of wilderness conservation is that we seek to preserve what must change. But, we must focus our attention on the rates at which changes occur, understanding that certain changes are natural, desirable, and acceptable, while others are not.

## **Ecosystem Integrity**

Ecosystems have integrity when they have their native components intact, in the face of external stresses. The components would include abiotic components (the physical elements, e.g. water, rocks, soil), biodiversity (the composition and abundance of species and communities in an ecosystem, e.g. shola forest, rainforest and grasslands representing landscape diversity; trout and rabbits representing species diversity) and ecosystem processes (the engines that makes ecosystem work; e.g. fire, flooding, predation). Hence, a system with a higher integrity is more stable, support higher diversity and hence could attract more nature/eco-tourists.

Sustainability has emerged as an umbrella concept, embracing many interconnected issues of environment and development. However, there are two distinct aspects viz. the long-term and different 'goal' of sustainability and the 'process' by which we might move somewhat closer to the goal (which is Sustainable Development).

The term sustainability is derived from the Latin, root - Sustainer (English translation Sustain) that means to hold up i.e. to maintain or prolong the productive use of resources and the integrity of environment. Only recently the concept of sustainability came into popular usage. There are many definitions for sustainability. Notable among them are:

- a process or state that can be maintained indefinitely (IUCN, 1991) -appears to be a dictionary definition
- ways of managing natural resources that do not create ecological debts by overexploiting the carrying and productive capacities of the earth (Pronk and Haq,"1992) - not yet a complete definition.
- Maintenance of the total natural capital sustainable at or above the current level as a minimum necessary condition - offers an operational specification of at least one element of sustainability.

Thus, sustainability is a dynamic concept.

Under these circumstances, it is easier to visualize/define non-sustainability than sustainability. In an absolute sense, the word 'sustainable' has no time horizon -going on forever. Because

nothing goes on forever, however, nothing is absolutely sustainable. To maintain modern high-tech civilizations and present day population levels, production systems must be modified and subsidized (by artificial inputs such as fertilizers, pesticides, fossil fuels, etc.). How far they are going to be sustainable is an open question.

The following are some of the important dimensions of sustainability:

### **Biodiversity in Ecosystems**

Biodiversity (biological diversity) is species richness i.e. the number of species present in an arbitrarily defined geographical unit. Biodiversity deals with both structure and function of the ecological communities. It is a variety of life forms, the ecological roles they play and the genetic diversity they contain; It is a telling measure of the imbalance between human needs and wants and nature's renewability and absorbing capacity. Even human cultural diversity can also be considered as a part of earth's biodiversity.

Based on what needs to be conserved one can study biodiversity at five levels: **Genetic diversity** (variability in the Genetic makeup among individuals within a single species), **Species diversity** (variety of plant, animal and microbial species in a given community), **Habitat diversity** (variety of different habitats in a given destination area), **Community Diversity** (diversity of organisms in a given community e.g. coral reef community) and **Ecosystem or Ecological diversity** (the variety of forests, deserts, grass lands, streams, lakes, oceans and other biological communities that interact with one another and their non living environments). All our basic human needs as well as our development needs utterly depend on this largely unknown "**bio - capital**". This rich variety of genes, species, and ecosystems gives us food, wood energy, fibers, raw materials, medicines etc.

### **CHECK YOUR PROGRESS**

1. What do you understand by the following terms?
  - a. Ecology
  - b. Environment
  - c. Ecosystems
2. Why, is ecology not taken as seriously as it should be by the public and decision-makers?

3. Discuss the importance of habitat diversity and biodiversity from tourism point of view.
4. Discuss the importance of carrying capacity and absorbing capacity from tourism point of view.
5. Write short notes on
  - a. Properties of Ecosystems
  - b. Ecosystems processes, goods and services.
6. State the five basic laws of Ecology. In what ways, these laws' are related to /affected your life style and your immediate surroundings? Discuss with examples from tourism
7. Use the first and second laws of energy to explain why, in the long run, a renewable energy based sustainable tourism strategies will be necessary.

## LESSON – 2

### ECO-TOURISM

The modern world is comprised of mass concentrations of people, mass production, and mass activities. Diversity and beauty of land and life are more and more replaced by uniformity and ugliness. Human settlements in their rush for development have turned beautiful tree-clad landscapes into desolate concrete jungles, and fertile lands with diverse native vegetation are increasingly destroyed by monocultures. Tourism is no exception to this general rule, since there are inseparable and intricate links between ecological and environmental conditions of the destination areas (and often far off places, but supplying resources to the tourist areas) and tourism activities. These links have to be understood before any tourism activity is commenced or expanded.

#### **Linkages between Ecology, Environment and tourism activities**

Tourism could lead to a variety of potential benefits. Yet uncontrolled mass tourism, the most predominant form of tourism to-day, inevitably increases the already existing conflicts, besides creating new ones. Tourism's voracious appetite for basic resources - land, water and energy - has meant that the tourism industry and Government agencies are increasingly finding themselves opposed over land rights and water rights by local people. Lack of access by locals to public beaches, violation by hotels of environmental regulations, and heavy-handed tactics by local authorities to free-up beach areas for hotels use, have all been cited in legal disputes throughout the world. For instance, most of the beach areas are lost due to construction of hotels in Kovalam, Kerala. In Goa one five-star hotel consumes much water as five local villages and one five-star tourist consumes 28 times more electricity per day than a local village. Local discontent over resource-use is understandable. Another serious concern is

**"tourism leakages"**. Often a major fraction of the money spent by the mass tourists ranging between 10 to 55% gets leaked away (to pay for imported goods and services) from the destination areas.

If conceived, improperly planned and uncontrolled tourism activities would adversely affect the natural as well as cultural resources. Local culture is "sold" as commodity, with little if any regard or value to the indigenous cultures. Such commercialization at best become disingenuous and at worst become highly distorted, accentuating negative stereotypes.

There are geographical, social, economic, ecological / environmental and psychological aspects of tourism. Among these, the ecological / environmental dimension of tourism is the most important and vital link for the survival of the tourism industry itself, since the industry cannot survive without protecting the ecology/environment of the destination areas. The industry has learnt this lesson after the irreversible damages have set in. Examples can be seen every where the mass tourism went out of control - starting from Ooty and Kodai lakes in the South to Dal lake in the North; from Kovalam in the South to Goa in the North. Even Taj Mahal is not spared. It is very pertinent to recall the Asian proverb "Tourism is like a fire; you can cook your soup in it; you can also burn down your house with it"

### **Alternative tourism typologies**

"Mass tourism" or "Traditional tourism" generally refers to the big conglomerates or tourist resorts in the world. The tourist companies are owned by big transnational corporations. One expects the same type of service and facilities wherever they are, and there is little interaction with the local communities.

In response to this monotonous stereotyped tourism, an alternative type of tourism has arisen. Its name is "Alternative Tourism". Under the alternative tourism concept there are a series of classifications and types of tourism. What characterizes the concept of "Alternative" is the existence of several small or medium companies, created by families or friends, where there is the possibility of more contact with the communities and where most of the times, there is a respect for the environment. This concept is generally used by Government institutions and academics, and is not popular among tourists.

The classifications that can be included under the concept of alternative tourism can be natural, cultural, events and others. The **"Natural" tourism** (tourism that you can undertake in natural places, about the nature, and/or for the preservation of the natural environment). It includes: adventure tourism, ecotourism, and nature tourism. The **"Cultural Tourism"** (tourism that involves contact and learning about a culture) includes the archaeological, rural tourism, religious and ethnic. **"Events Tourism"** (tourism interested in experiencing characteristic events of an area or important annual events) include sports, carnivals and festivals for example. In the classification of other types everything enters which cannot be included in the other classifications like volunteering, farm stays, educational tourism, etc.

Over the last decades, understanding these complex and interconnected issues by the world tourism industry, tourists, Governments and communities have increased as indicated by the evolution of numerous alternative tourism paths, such as 'green' tourism, 'responsible tourism', 'sustainable' tourism, 'eco-development' tourism, 'eco' tourism (ET), 'eco-cultural' tourism (ECT), 'eco-cultural' tourism (HECT), 'health tourism', 'community' tourism, "ethical" tourism, 'fair-trade' tourism and also 'pro-poor' tourism (PPT).

### **Eco Tourism (ET)**

ET is emerging as a dominant concept throughout the world, attracting a larger number of alternative tourists. In Southeast Asian countries, eco-tourism is increasingly being made a flagship project to attract hard currency for economic recovery and to help communities ride out of the debt crisis.

Though we cannot trace the origin of the term 'Eco-tourism (ET) one of the first to use it appears to be Hetzer (1965), who identified the following 4 pillars of 'responsible tourism':

- Minimizing environmental impacts
- Respecting host's cultures
- Maximizing the benefits to the local people and
- Maximizing the tourist satisfaction.

Growing Environmental concern coupled with an emerging dissatisfaction with ill-planned mass tourism led to increased demand for more authentic nature based experiences of an alternative nature. By mid 1980s, ET was identified as a means of achieving the twin goals of Biodiversity conservation and sustainable development in a number of countries.

Sustainable tourism is defined (WTTC, WTO and Earth council, 1996) as "Tourism that meets the needs of the present tourists and host regions while protecting and enhancing opportunity for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, bio-diversity and life supporting systems (soil, air and water)". Thus, it has the inbuilt mechanism for promoting peace and harmony among the tourism stakeholders.

ET activities are offered by a large and wide variety of operators, and practiced by an even larger array of tourists. While there is no single universal definition for ET, its general characteristics can be summarized as follows.

All nature-based forms of tourism in which the main motivation of the tourists is the observation and appreciation for admiring, enjoying and/ or studying nature as well as the traditional cultures prevailing in relatively undisturbed or uncontaminated natural areas.

It is generally, but not exclusively organized for environmentally /socially conscious, small groups by specialized and small, locally owned businesses Foreign operators of varying sizes also organize, operate and/or market ET tours, generally for small groups

It minimizes negative impacts upon the natural and socio-cultural environment.

It supports the protection of natural areas and the revival of culture by generating equitable economic benefits for host communities (by providing alternative employment and income opportunities), organizations and authorities managing natural areas with conservation purposes, and adding value to local heritage, cultural and natural resources through sustainable tourist

access to those resources and thus providing incentives for protecting them.

It increases awareness towards the conservation of heritage, natural and cultural assets, both among locals and tourists by participatory, interactive, interpretative, educational enlightening experiences.

### **Protected Areas and Eco Tourism**

ET can benefit protected areas (PAs) in three ways:

1. ET by definition would provide financial support for the conservation of biodiversity by way of visitor fees, accommodation charges, food bills etc.
2. ET enhances local livelihoods by providing employment/small business opportunities and thus ensure that the local communities stand to gain by protecting the habitats /BD
3. ET can be used to raise awareness about the ecological importance and the rich cultural diversity of the destination areas that are under threat among the local communities and the tourists

### **Third world countries and Eco tourism**

However, in reality, none of the above benefits are realized in many third world countries that have a greater potential for ET in PAs. Though the designation of PAs contributes to conserve wildlife and promote tourism, it is often at the cost of the following:

Alienation and uprooting the local traditional communities, affecting their livelihood security

Inducing faster acculturation, thus endangering the much valuable traditional knowledge base

Creation of negative images about wildlife, thus encouraging poaches and over exploitation.

### **Positive Tourism Development**

However, it is important to note that sustainable ecotourism, with positive social and cultural outcomes, can be achieved through community consultation, planning and management. Positive tourism developments at local villages and indigenous cultural sites include:

**Site Improvements:**

- Upgrading sanitation and infrastructure at local villages
- Developing culturally appropriate boardwalks and trails

**Managing Visitor Behaviour:**

- Host control over visitor activities (eg. photo restrictions, local guides)
- Hosts and tour guides request tourists to follow local customs

**Education and Interpretation:**

- Cultural information provided by tour operator/tour guide
- On-site cultural interpretation by elders, healers & locals

**Local limitations on use/access:**

- Hosts set limits on access to homelands
- Hosts establish preferred or permitted tourist activities (activity limitation)
- Hosts indicate appropriate times for tourist access and use (temporal limitation)
- Hosts set limits on access to cultural knowledge and rituals (cultural limitation) (eg. attend only public events, gender specific sites)

There are several national and international NGOs who are focusing on integrating livelihood sustainability and cultural survival in ET landscapes.

**Constraints for promotions Eco-tourism:**

ET has limited potential due to various limitations that include:

Geographical and biological factors - due to the fragility of the habitats involved

*Physical factors (denser cover in protected areas vs higher visibility preferred for viewing)*

Economical factors (only a few sites are sufficiently unique to attract enough tourist so as to be economically self-sufficient)

Cultural factors (danger of acculturation, if Eco-tour promoters/tourists are insensitive to the local cultural diversity)

Ownership rights and sharing of benefits.

ET is not a panacea - cannot replace mass tourism every where (due to the fact that it can be introduced only under certain pre-conditions)

*Conflicts between tourism development and conservation - the trade/offs/compromises without degrading habitat/species diversity and livelihood security are becoming difficult due to the market forces*

Booming human populations, especially in the third world exacerbate the hunger for land and its natural resources thereby threatening the ecological integrity and sustainability of protected areas.

Such constraints reflect the relative immaturity of the tourism management field and help us to understand the complexity of the issues involved and the community based/ community run ET case studies would guide us to formulate viable ET ventures.

It is encouraging to note that throughout the world, there is a growing need for 'greening' the tourism industry and to 'eco-sell' tourism and travel, as modern tourists are seeking destinations with unspoiled natural beauty. Some tourist companies consider it conveniently as a synonym with any offering resembling an "outdoor activity,"<sup>1</sup> Often the ET label is misused by tourism operations in what is known as "**green washing**," or "**green cloaking**" which include unregulated development of relatively undisturbed areas, appropriation of ancestral lands, or just applying traditional tourism development models under the name of eco-tourism. For example, there is a 200-room "eco-lodge" in the

Brazilian Amazon with no sewage treatment, no involvement with local communities and no effort to lower the social or environmental impacts created. Many state tourism development corporations in our country have ignored the very definition of ET and have started promoting nature based mass tourism without integrating environmental and socio-economic sustainability in to their programmes.

The ecotourism industry is in a relatively early and experimental stage in India. A comprehensive management plan based on site-specific ground realities should be drawn rather than an ad hoc system of add-ons by simply copying a few selected elements from the Western models of ET. The sustainable and efficient use of open access resources such as nature and culture is a general difficulty of tourism. There is a need for a common vision among different stakeholders to make eco-tourism a truly effective industry. To avoid the dangers of unsound tourism development, to strike a balance of profitability and sustainability, at the local level, a clear perception of goals and strong management of programmes for Ecotourism development is needed. It is important to evaluate a definition of roles of different stake-holders of ET - the local communities, NGOs, CBOs, the public and business sector, the Govt. agencies, the academic/research community and the funding agencies in the inevitable commercialization of the natural and cultural heritage of our vast and culturally and ecologically rich country.

Realizing the potential pitfalls, the following Code of ethics have been evolved for ecotourism (IIRR, 1992):

### **Guidelines**

The following are the suggested guidelines for adopting the codes of ethics for Ecotourism:

The eco tour must be well-guided. A knowledgeable tour guide is necessary to provide utmost education to tourists about culture, topography, special attractions of the area, protection of the environment, restricted and danger zones as well as the peace and order situation of the area and the necessary, precautions. The tour guide is responsible for an enjoyable, safe and non-destructive nature tour.

Involve local residents in the planning and implementation of activities. The local people must be part of the management of the activities. If there is not enough involvement, an antagonistic relationship may happen. In fact, a community managed, more preferably community run ET enterprises would be more ideal.

Limit participation of the tourist group to a minimum of four to a maximum of 20 people. It is easier to manage a small group. Too many people may disturb, or destroy natural habitats.

Ecotourism organizers should provide an adequate and continuous program for resource management. Tour organizers should play a lead role in managing natural resources in the forms of trail maintenance and signs, information on the endemic endangered and extinct species, research and education, trainings and provision of basic facilities.

Tour destination should be appropriate for the needs of the tourists. The destination must be first assessed for a better itinerary of the trip and be equipped with the necessary logistical requirements, e.g., map, compass, etc.

### **Eco cultural tourism (ECT)**

There are many forms in which ECT activities are offered by a large and wide variety of operators, and practiced by an even larger array of tourists. Its general characteristics can be summarized as follows

All nature-based forms of tourism in which the main motivation of the tourists is the observation and appreciation of nature as well as the traditional cultures prevailing in natural areas

It contains participatory, interactive, and educational and interpretation features

It is generally, but not exclusively organized for environmentally /socially conscious small groups by specialized and small, locally owned businesses. Foreign operators of varying sizes also organize, operate and/or market ECT tours, generally for small groups.

It minimizes negative impacts upon the natural and socio-cultural environment

It supports the protection of natural areas and the revival of culture by:

Generating equitable economic benefits for host communities, organizations and authorities managing natural areas with conservation purposes, and adding value to local cultural and natural resources through sustainable tourist access to those resources

Providing alternative employment and income opportunities for local communities,

Providing incentives for cultural survival by culture-based Tourism activities

Increasing awareness towards the conservation of natural and cultural assets, both among locals and tourists by participatory, interactive, interpretative, enlightening experiences

**Key factors influencing the socio-cultural impacts of ECT include:**

Scale of tourism development -Number of tourists in relation to the host population and the geographic distribution of host/guest populations

Economic level of host community- Disparity between materially-poor hosts and well-off tourists

Cultural differences between host and guest- Extent of variation in cultural values, customs and behaviour

Community control of tourism- Level of host control over access and behaviour of tourists

Cultural expectations of visitors- Degree of cultural modification required to meet visitor aspirations

ECT can become an important means of sustainable mountain/ island development as economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential Ecological.2

Processes, Biodiversity and Life \*support systems. However, we are sailing in uncharted waters, developing new businesses in remote areas with limited infrastructure and with people who are, in

many cases, entering into a cash economy for the first time. Hence, ECT ventures must not only be financially self-sustainable, but Ecologically and Socially Sustainable as well, besides Culturally responsible. These are serious challenges, we have to face. (Boo, 1990)

### **Health tourism**

Health tourism deals with the promotion of physical/mental/spiritual health through the following:

- Use of traditional medicines/healing practices e.g. Ayurvedic tourism in Kerala
- Exploiting the traditional Yoga practices for improving physical / mental / spiritual health
- Recently emerging medical tourism —exploiting the cheaper cost of treatments in Indian hospitals

Due to the special nature of this niche segment, specific efforts are required for attracting a steady flow of tourists. This would include - cost effectiveness, quality and reliability of the services-offered, the setting' which needs a quite, unpolluted and serene atmosphere and accessibility.

### **Heritage tourism**

Heritage zones would include historical monuments, artistic and archaeological sites, temples and museums, folklore theaters and festival zones. Culture and heritage interact closely in tourism development. Historical places, objects and manifestations of cultural, scientific, symbolic, spiritual and religious values are important expressions of the culture, identity and religious beliefs of societies. Their role and importance, particularly in the light of the need for cultural identity and continuity in a rapidly changing world, need to be promoted. When Heritage of the destination areas can be exploited for promoting tourism, we have a case for heritage tourism. E.g. Goa, Hampi, Gajurahao, Mahabalipuram and Tanjore,

### **Adventure tourism**

Adventure travel appears to have developed out of the broader, wider growth of traditional outdoor and wilderness recreation during the 20th century. Unlike other forms of recreation,

adventure travel offers a unique opportunity in which participants become more experienced and pursue extended scales of adventurous endeavors.

Adventure travel is travel to new and exciting places with an intention to seek, to explore a new experience or the expectation to find, adventure. It can be as simple as hitch-hiking across a countryside you have never visited before. It can be rock-climbing or para-gliding that needs special equipments. It appears to require an element of uncertainty, or perceived risk or controlled danger associated with personal threat in that the travelers are not following a fixed schedule and are free to speed up, slow, or halt their travel, and often take spur-of-the-moment side trips in a natural environment or exotic outdoor setting.

A planned and guided group tour probably cannot really be considered adventure travel. But it could have the same itinerary, without the uncertainty. To the participants, it would still seem like adventure travel. The growth of adventure travel has been accompanied by an enormous variety and availability of adventure travel products in international travel and tourism.

### **Angling (fishing) tourism**

Trout fishing in the rivers and ice-fed mountain streams is a great sport. You may put your wits against the wily trout-both brown and rainbow-and catch the excitement of hooking a rainbow. Solitude seekers can spend hours in quiet contemplation, of the beauty around. The following table provides a summary of the location and importance of notable angling tourism destination areas in our country.

#### **Angling tourism destination areas in India**

Destination area		Remarks	
Himachal Pradesh			
Beas River in the Kullu Manali - Larji valley		Brown Trout - April to June	
Arunachal Pradesh			
Bhalukpong and Tipi on the river			

Kameng			
Pashighat on the river Siang			
Tezu on the river Lohit			
Uttar Pradesh			
Dodital Lake ~ Uttarkashi ji-Himalayas		Snow-clad peaks, a fresh water lake and-a tempting trout pool	
Ranganga and the Sharda rivers - Jim "Corbett National Park.			
Rishikesh			
South India		April to September	
Cauvery Fishing Lodge near Mysore, Karnataka		Mahseer	
Munnar, Kerala			

Angling the Mahseer is a virtual battle of strength, fact and speed. On overcast days the fish tend not to bite in the regular places, therefore try out new places.

### 3.8 Water sports

Waterscapes, pure and unspoiled, in their original glory are highly sought after by the majority of the tourists. This may include, white water rafting, water skating and kayaking.

The great rivers of India arise among the icy heights of the Himalayas. Racing among deep gorges, breaking into silvery rapids and thundering over boulder-strewn beds, challenging and inviting the white water rafting enthusiast. The Ganga, the most sacred of Indian rivers, attributes a holy legend to her origins, but that aside, in its mountainous terrains, affords some of the most spectacular river running in the country. Ideal for both paddle rafting and oar rafting holes, hydraulics, bends in the river bring fresh excitement

for participants. Other rivers like the Sutlej, Beas and Yamuna are also a sporting challenge.

The kayak and canoe trips explore the waterways of the paddlers paradise, with visits to rivers and lakes, jungle streams, flooded forest and the rivers and channels draining into the mighty Indian rivers. Trip itineraries are highly flexible depending on the interests of individual groups, and are also dependent on time of year (as water levels vary considerably). Due to the geographical location of India and wider geographical coverage, Indian rivers, however, good destinations are readily available year-round. One can carry full camping gear (tents, mattresses, linen), food, drinking water and cook and Kitchen accessories so that the time can be spent more on enjoying/experiencing nature out-door.

The Kerala boat race, from time immemorial draws a huge number of tourists- both national and international - simply to watch the fun.

### **CHECK YOUR PROGRESS**

1. Compare and Contrast Mass tourism with Eco-tourism with appropriate examples
2. Define Ecotourism. Discuss the potentials and constraints for introducing Ecotourism in India
3. Explain the methods you would adopt to evolve community based Eco-Tourism.
4. Trace linkages between Eco tourism and Environment/socioeconomic factors. Discuss with suitable examples.
5. Write short notes on a) water sports b) angling tourism and c) Adventure tourism

## **LESSON-3**

### **ECO SYSTEM AND TOURISM DEVELOPMENT**

#### **INTRODUCTION**

As the tourism industry is expanding vigorously, it is confronted with serious and difficult choices about its future due to the inevitable negative impacts of development. Many of these decisions will have irreversible consequences on the very natural resources on which the industry survives - leading to un-sustainability. While many tourism promotion efforts banner the climate, sun, warmth, and sand of particular destinations, tourism's dependency on environments, in particular, nature-dominated environments, does not appear to be well understood within the tourism and recreation industry. Hence, we have to systematically explore the linkage that exists, between tourism, the environment, and sustainable development.

#### **6.2. Principles of development**

Forests, soils, wetlands, lakes, oceans and other naturally productive ecosystems provide food, lumber, habitat, oxygen, waste handling, temperature moderation, and a host of other essential goods and services; For millions of years they have been purifying the planet and creating a place suitable for human and other life. When we degrade these systems, by overexploitation, we endanger our livelihoods and the very likelihood of human existence. The emergence of local/regional environmental problems- soil erosion, drought, habitat fragmentation/degradation, pollution and Biodiversity loss and global environmental problems- global warming, acid rain and ozone depletion are the warning signals in response to our "greed" to ruthlessly exploit nature.

Despite technological, economic, and cultural accomplishments, human beings remain ecological beings. By the very process of development, we affect directly the five of the seven foundation elements of survival: air, soil, water, biodiversity, and population density. We affect the other two, sunlight and

climate, indirectly. Nature's productive capacity for humans is constrained by what is accessible as resources. Likewise, all energy and matter used by humans is eventually returned to the environment as waste. Humanity has intensively transformed about 50% of the ice-free land surface, has tied up about 50% of accessible, renewable fresh water, has fully exploited or overexploited about 65% of marine fisheries, has increased the carbon dioxide concentration in the atmosphere by about 30%, and has driven more than 25% of bird species to extinction in the process of development.

### **Eco development**

The origin of the concept eco development can be traced to the 1972 United Nations (UN) Conference on the Environment in Stockholm, Sweden. Although the term was coined by Maurice Strong, Secretary-General of the Conference, "It was popularized by Ignacy Sachs. He suggested the following definition (Sachs, 1974):

Eco development is a style of development that, in each eco-region, calls for specific solutions to the particular problems of the region in the light of cultural as well as ecological data and long-term as well as immediate needs". Accordingly, it operates with criteria of progress that are related to each particular case, and adaptation to the environment plays an important role.

Any **Eco development strategy** should have the following components:

- **Ecological limits of the environment must be respected.- CC, AC and sustainability**
- **Development must be directed toward meeting the needs of poor people, before serving the wants of elites, thus ensuring sustainable livelihoods by active participation of the poorest of the poor in the development projects**
- **Development must be geared toward providing self-reliance- to reduce dependence on the wealthy countries; for achieving this goal, three basic strategies - augmentation (increasing the supply of renewable resources e.g. biomass), substitution, (e.g. substitution of fire wood with biogas, if relevant) and conservation (reducing wastage e.g\ energy efficient stoves / bulbs / engines) are**

to be adopted; the principles of 3Rs - reduce, reuse and recycle are to be followed wherever possible using appropriate Eco-technologies

- Eco development is not just for the poor countries of the Third World, but must also be extended "to the richer countries in the form of a redevelopment toward a more ecologically sound and socially satisfying way of life.

Eco development is a part of the environment and development activities of UNEP by which it promotes sustainable management strategies for watersheds, Forests, grasslands, deserts, coastal zones etc., throughout the world, sustainable tourism can be visualized as an integrating thread in such situations and the resultant product is **Eco development tourism**, it is community-centered and has the following major characteristics:

- The community plays a key role in the planning and decision-making of tourism activities in their area.
- It is biased towards the development of natural sites and habitats in accordance with local and indigenous culture and values.
- It advocates community control and management of natural resources. It helps build community capacity to manage the development of its area.
- It involves setting up community organizations and community owned *tourism enterprises*, training leaders and community specialists, as well as developing the appropriate Eco-technologies required to ensure sound management of destination areas/ ecosystems.
- It helps to create development funds to support economic, social and environmental projects of community partners.
- The natural environment is the base of development of a community. It is also a vital base of tourism. Thus it is oriented towards ecological protection and biodiversity conservation. It recognizes the carrying capacity of each site and of the community. It is sensitive to visitor impact and to the limits of acceptable change of community habitats.

- It promotes increased appreciation of cultural diversity. It promotes the development of tourism infrastructure facilities that are in harmonious integration with the landscape, indigenous architecture, living matter, technology, people and their culture rather than towards the creation and promotion of artificial tourist enclaves such as golf courses and mega-resorts.

### **Role of the Eco system**

Tourism is a sector of the World's economy that has tended to underscore and exacerbate the inequalities that exist between core metropolitan nations and peripheral marginal economies. In this process, it perpetuates the division between those who have access to resources and those who do not. There are developed and underdeveloped economies in the world. The most important factors in gauging development are people, their number, age, enterprise, initiative, inventiveness, knowledge and willingness to sacrifice. The way in which these factors are put to use determines development. Technologically inferior societies exploit their landscapes within the framework of their social structures.

A review of tourism literature of the less developed countries underscores that there is a set of evolutionary pattern of multi-national interests in the tourism sector of the underdeveloped countries. Dependency of the less developed countries on the advanced countries occurs from demand from overseas tourists and new foreign company investment in the LDCs. When a potential tourist destination is located, the involvement of the multinationals increases. Foreign companies greatly influence the image of a destination country through development and promotion. Such efforts lead tourists to perceive the host country in terms of this image and the nature of hotel accommodation, attractions, and other tourist services as given publicity.

In a less developed country, airlines and hotel chains are owned by the foreign multi-nationals. The host country is unable to provide agricultural and manufacturing products to guarantee good quality supplies of goods and services for international luxury standard facilities. Therefore, there is a strong reliance on imported supplies for both the construction and operation of tourist facilities. Also middle and senior management levels of tourism developments in underdeveloped countries are often occupied by expatriates. When the airlines and hotels are owned by foreign

companies, a mere 22-25 percent of the retail & tour price stays in the destination country. LDCs and developed countries are separated by a number of key structural differences. They are finances, the political climate of a country, accessibility to opportunities, discretionary incomes, resources for the acquisition and planning of land.

### **Two concepts - core and periphery:**

In the development theory there are two concepts viz., the core and periphery. The core area in a country is characterized by a dynamic growing central region and the periphery is denoted by a slower growing or stagnating periphery. The core is markedly high growth potential and the periphery is often marked by declining rural economies with low agricultural production. Peripheral regions are marginal places from the social, political, economic and perceptual perspectives. Scholars on tourism management are of the opinion that tourists avoid central places and are drawn to periphery. They desire to reach the natural resource base not found in cities. This theory has been further expanded to state that tourism is part of the continual process carried out by humankind in order to specialize and diversify the exploitation of the soil. Tourists from the core, pass through an international gateway (semi-periphery) to a national gateway (periphery) and then to a regional gateway (periphery frontier). In this region, there is always a clash between traditional interests and national development goals. As frontier regions succumb to repeated intrusions the uniqueness of these areas diminishes. The reasons for the tourists wishing to move to outward territories are their eagerness to experience something different in a remote setting and to escape the mainstream of tourism which can be achieved by taking a road which is less travelled.

The relationship between core and periphery has both the psychological and spatial components. As a peripheral region becomes identified as a tourism locale of international standards, exogenous investors step in and take over the region. The peripheral government becomes an observer of its own fate. If such a situation has to be avoided, the periphery must act to control the decision-making in the development of the tourist industry and limit the development to a scale of growth in tune with the resources, capital, manpower and culture within the territory. It is seen that remote travel regions are dependent on national and international

markets, inbound and outbound tour operators as well as externally based transport modes and schedules. With the inability and lack of resources fully to plan and implement ecotourism on their own, the cycle of tourism dependency continues for peripheral regions.

### **Community Development**

Community development is based on local initiatives and it advocates a site-specific approach to finding solutions to community problems using community members and community resources. It is a process by which the efforts of the people themselves are united with those of the Governmental authorities to improve the social, economic and cultural conditions of the communities. Community development encompasses all aspects of the community life and focuses on the best quality of life possible for its members. It creates new business and employment, increasing cultural awareness or providing a range of opportunities for all members of the community. A community economic development model is small, green, social and more inward in its orientation by striving to help consumers to become producers, users to become providers, and employees to become owners of enterprises through the principle of economic self-reliance, ecological sustainability and building a community culture.

Tourism is seen as a key community development tool with the recognition of its economic contribution in bolstering up stagnating economies and diversifying the existing sectors with its ability to unify the community members. In the present times in the less developed countries, tourism is being relied upon to sustain a backward economy, which was once dominated by multi-national investors. To-day, all tourism initiatives are owned and controlled by local people. Community development should be seen relating to tourism and ecotourism from many different perspectives. Scholars on the tourism perspective are of the opinion that if tourism development is to be viable as a long-term economic strategy, the social and ecological concerns must be addressed and the resource base must be protected in the process. The host community is the economic, social, cultural and infrastructural resource base for most tourism activity and resident quality of life is a measure of the condition of the resource.

### **Participation in the Ecotourism Sector**

All sections in the community need to co-operate effectively in ensuring that a high-quality product is delivered without diminishing the ecology of the resource base.

There will be direct and indirect beneficiaries and participants in the ecotourism industry. It should be recognized that the entire community should be involved in the eco-tourism development at some level. Participation plays a key role in the initiative as it empowers people to play a role in the decision making process where, in many cases it is only those who are politically connected or affluent who are involved in the control and management of the enterprise. The community ecotourism initiative needs to be founded on the notion of trust and transparency.

The impacts of tourism are not the same for all residents. Resident's individual values need to be recognized by tourism developers in order to make their projects successful. There are different types of citizens in the community like the attached resident, resource user and the environmentalist. Attached person is a older citizen, a long-term resident in the community, who loves living in the community because of the social and physical benefits he derives. Resource user includes people like anglers and other recreationists. Environmentalists are persons who harp on the negative aspects of the development.

### **Education**

Education plays a key role in the empowerment process of revitalization through ecotourism. Through education and partnerships, local farmers have stopped their conventional practice of clearing and denuding the land for agricultural purpose in favour of land management strategy that is more environmentally sound. In doing so they will be able to attract international tourists fascinated by the ecological and cultural diversity' of their region. Education helps to rekindle people's love and appreciation for land, which is important for both communities build and nation building. Education and tourism have played a significant role in diversifying the local economy in parts of the world.

### **Partnerships**

A partnership is an on-going arrangement between two or more parties based upon satisfying specifically identified mutual needs. such partnerships are characterized by durability, over-time,

inclusiveness, co-operation and flexibility. As tourism is being recognized as a community development tool, development must be sensitive to the requirements of many stakeholder groups including tourism providers, public providers and residents. Partnerships must be struck to ensure to deliver high quality product and it is based on the notion that tourism experiences rely on all aspects of the community. Communities' intent on the development of a tourism industry will increasingly rely on the positive benefits of partnerships in being accountable to the local and outside people.

The partnerships developed for ecotourism must also fit into systems that have been developed at regional and national levels. Many partnerships can be struck to facilitate an atmosphere of co-operation and trust. Potential partners include

- 1) Organizations within the tourism industry particularly tour operators,
- 2) The government tourism bureau and natural resource agencies
- 3) Non-governmental organizations (NGOs) especially those involved in the environmental issues, small business management and traditional community development,
- 4) Universities and other research organizations
- 5) Other communities including those with a history of tourism and also those that are just beginning and
- 6) Other international organizations, public and funding institutions, national cultural committees and many others.

Partnerships should be built on the following principles in order to help the cooperative efforts of the stakeholder groups.

- 1) Build on the foundations of local culture,
- 2) Giving responsibility to local people,
- 3) Considering returning ownership of at least some protected areas to indigenous people,
- 4) Hire local people,
- 5) Link government development programmes' with protected areas,

- 6) Give priority to small scale local development,
- 7) Involving local people in preparing management plans,
- 8) Possessing the courage to enforce restrictions,
- 9) Building conservation measures into the evolving new national cultures and
- 10) Supporting diversity as a value.

The partnership ideal must embrace the present and future needs of the groups involved in any transaction.

### **Site Development**

The tourism industry has long been recognized as a formidable agent of social and ecological change in a positive context through increased education, renewed pride in culture, the conservation of heritage and economics. Some others feel that tourism development occurs at the expense of the people and the local resource base. Many tourism developments like hotel constructions in many countries have been identified, as excessive in their impacts on beach environments. Improper developments like the tourists being prohibited from swimming the ocean owing to pollution and lack of sewerage systems hamper the tourism industry.

The style and extent of tourism development in the 1990s has been tempered by the trend towards the increase in mega-development projects designed to cater to a growing market of travelers looking for self-contained and hassle-free vacations. Most of the mega development has been centred in politically stable democracies. Untapped markets are also finding the mega development boom happen. In the midst of the mega development push, there has emerged the move towards more responsible travel and development in response to the green movement and in keeping ahead of competition.

### **Sustainable Tourism**

Sustainable tourism development respects nature for its restorative qualities. The human experience is set in harmony with the environment and an opportunity is created to allow a reconnection of human need to natural systems on which all life is

based. *Sustaining tourism development strives to meet the following criteria:*

- 1) Providing education for visitors on wildlife, native cultural resources or natural features or historic features.
- 2) Involving indigenous population in operations and interpretations to foster local pride and visitor exposure to traditional values and techniques
- 3) Accomplishing environmental restoration
- 4) Providing research and development on and/ or demonstration projects of ways to minimize human impacts on the environment.
- 5) Providing spiritual and emotional recuperation
- 6) Providing relaxation and recreation
- 7) Educating the visitors to realize that knowledge of our local and global environment is valuable and will empower their ability to make informed decisions

Ecotourism suggests the establishment of ecology in place of the traditional tourist lodges. An eco-lodge is a nature dependent tourist lodge that meets the philosophy and principles of ecotourism. The importance of ecology is also educational and participatory experience while at the same time being developed and managed in regard to the local environment in which it exists. A traditional tourist lodge has the following aspects.

Traditional lodges are meant for luxury and are built in a generic style. They mainly focus on rest and relaxation and their activities are facility based like provision of swimming pools, golf courses, shops etc. They aim at development and is based on profit maximization motives. They aim to provide for high guest capacity, services and high prices. Traditional lodges need high investment to construct and their key attractions are facility and surroundings. They provide gourmet meals, smart service and elegant presentation. In these lodges guides and nature interpreters are not available. They have hotel chains which has a market of its own.

**CHECK YOUR PROGRESS:**

- 1) Explain the concepts of "Core and Periphery".
- 2) Describe, how, the community development plays a key role in harnessing the ecosystem in the development of tourism
- 3) Discuss the role of participation in the development of the ecosystems.
- 4) What are the principles to be followed to help the co-ordinate efforts of the community in harnessing the eco-system for tourism development?

## **UNIT 2**

### **LESSON-4**

#### **POLLUTION AND ITS TYPES**

##### **Environmental Pollution**

Pollution refers to any undesirable change-in the physical, chemical or biological characteristics of our environment, i.e. air, water and soil that may or will adversely affect humans or other species and life support systems of our biosphere directly or indirectly. A substance whose introduction into a resource damages the latter's usefulness is called a pollutant. However, some species are tolerable to certain pollutants up to fixed concentration levels.

Pollutants are grouped into two broad categories: biodegradable pollutants (e.g. organic waste such as vegetable wastes, human faeces, distillery wastes etc.) and non-biodegradable pollutants. Non-biodegradable pollutants such as heavy metals and pesticides, move through the food chain and may get magnified to dangerous levels in higher trophic level organisms as they tend to concentrate them. Some of these combine with other compounds and produce toxic substances. However, biodegradable materials such as human and animal wastes, agro-based residues and fertilizers can also pose a threat if their quantities or inputs exceed the assimilative capacity of the environment. Environmental pollution can be classified into air pollution, water pollution and solid waste pollution.

##### **4.1 Air pollution**

The composition of atmosphere has remained the same for thousands of years in the earth's history. However, only in the last 100 to 200 years rapid changes have occurred which have much higher impacts on the biosphere. The major constituents of air  $N_2$ ,  $O_2$  and inert gases that comprises about 99.9% have not changed. But some minor and trace constituents such as sulphur dioxide

(SO<sub>2</sub>), oxides of nitrogen - N<sub>2</sub>O, NO, NO<sub>2</sub>(NOX) methane (CH<sub>4</sub>) chlorofluorocarbons (CFCs) along with carbon dioxide (CO<sub>2</sub>) unburnt hydrocarbon (HC) and suspended particulate matter (SPM) have increased. As we know, these are the major air pollutants responsible for the deterioration of air quality around us.

In order to comprehend the problem of air pollution we must investigate the following:

- the sources of pollutants,
- the reasons behind emission increases in the recent past and
- their trends in future.

The following Table (1) provides the sources for the predominant air pollutants. Table (1) Sources of air pollutants

Pollutants	Sources
Oxides of Carbon (CO <sub>2</sub> and CO)	Use of coal and oil for energy production, manufacturing and transport, Biomass burning-burning of forests and savannah grasslands for pasture and cropland
Oxides of Sulphur (SO <sub>2</sub> and SO <sub>3</sub> )	Burning of coal containing sulphur, ore-smelting - for extraction of metals like Cu and Fe from their sulphide ores, industrial processes, municipal incineration, use of petrol and diesel for transport vehicles, burning of fuel at the stationary sources
Oxides of Nitrogen (N <sub>2</sub> , NO And NO <sub>2</sub> )	Nitrogen Fertilizers, burning of biomass

Methane and other Hydrocarbons		Burning of fossil fuels, (coal, oil and natural gas), rice cultivation, domestic animals, burning of forests and savannah grassland, municipal land fill, microbial activity of sewage.
Suspended particulate matter (SPM)		Formation of soot, smoke on burning; of coal, transport vehicles raise dust and, release smoke, building construction, stone crushing
Chlorofluorocarbons (CFCs) and chloro compounds		Refrigerants, aerosol sprays, foam plastic for making disposable fast food containers
Photochemical oxidants (ozone PAN)		Photochemical reactions in the lower troposphere reactions of oxide of nitrogen and hydrocarbons and with oxygen

About 60% of SO<sub>2</sub> emission is due to burning of coal. We often see trucks, buses, cars, two wheelers and three wheelers belching black smoke from their exhaust. This is primarily due to the use of adulterated fuel. Transport vehicles contribute to oxides of Nitrogen (NOX), Carbon monoxide (CO) and Hydrocarbon (HC) emissions. They also emit lead because tetra methyl lead is added to petrol as antiknock substance to increase engine efficiency.

Agricultural activities too, are a major cause of air pollution. About 60 to 65% of carbon dioxide is produced from burning of forests and grassland, to clear areas for pastures and cropland. 40% of methane is produced from paddy fields, guts of live stocks and also from burning of biomass. Methane is produced in the guts

of livestock on breakdown of organic matter by anaerobic bacteria. Nitrous oxide is produced from nitrogen fertilizers, livestock wastes and biomass burning.

Hence, we find that all the primary occupations of man—agriculture, animal rearing, and lumbering, mining etc. cause pollution of air. Industrial activity mainly smelting of some metal ores produces large quantities of  $\text{SO}_2$ . Chemical manufacturing units produce thousands of hazardous chemicals. Among these, Chloro Fluorocarbons top the list. These are non-biodegradable with a long life ranging from 7 to 10 years. Before being washed out of the atmosphere each 10 chlorine atoms destroy as many as one million molecules of ozone. Chemical plants are a large source of industrial emission of toxic air pollutants responsible for about 35% of the total emission. Other major sources are paper, plastic, rubber, automobile industry. Chemical manufacturing units today produce thousands of chemicals along with a number of byproducts that may or may not be useful. Many of these products are carcinogenic. Tobacco smoke, asbestos fibers, nitrosoamine, dioxin, polychlorinated Biphenyls (PCBs) and pesticides are the major environmental contaminants.

Suspended particulate matter (SPM) is a major air pollutant. Dust is generated from various sources such as coal dust—from cement factories; silica dust—from stone crushing, building construction, etc. A large amount of dust is also blown by transport vehicles. In India, about 80 million tonnes of fly-ash is generated from coal fuelled power plants annually. The country has over 10,000 stone crushers. All these put together let out 1,000 tones of stone dust daily in the atmosphere. These particles may remain in the air for a long time. Estimates show that the level of air pollution has been increasing since the turn of this century and it will continue to increase if strict measures for its control are not exercised.

#### **Industrialization and Air pollution:**

Air pollution in India has been aggravated over the years as a result of rapid development based on expanding industrialization. Growing cities, increasing traffic, rapid economic development and industrialization, and the resultant higher levels of energy consumption (chiefly fossil fuels) have culminated in the release of more and more pollutants. The increase in the number of vehicles

contributes significantly to the total air pollution load in many urban areas. The number of motor vehicles in India has increased from 0.3 million in 1951 to 40.94 million in 1998. Apart from the concentration of vehicles in urban areas, other reasons for increasing vehicular pollution include the types of engines used, age of vehicles, "poor road conditions, outdated automotive technologies, poor fuel quality and traffic congestion resulting from clumsy traffic management systems.

In India, air pollution is restricted mostly to urban areas, where -automobiles (generating carbon monoxide, particulate matter, hydrocarbons and oxides of nitrogen) are the major contributors, and to a few other areas with a concentration of industries (releasing toxic gases) and thermal power plants (spewing out fly ash and sulphur dioxide).

#### **Effects of Air pollution:**

Since the air pollutants are inhaled, they attack various parts of the respiratory system on their route to air sacs in the lungs. Once they reach the blood, they circulate throughout the body and reach the target organs. The extent of damage depends upon a particular pollutant, its concentration in the air and exposure time. Our body's defense mechanism helps to eliminate them to some extent. However, exposure to higher levels overloads and degrades the body's defense mechanism.

#### **Respiratory diseases**

Evidences show that air pollutants are linked with respiratory and some other diseases in human beings. For example, Sulphur dioxide is a major contributor to lung diseases. It causes irritation to nose and mucous lining, shortness of breath, tissue fluid accumulation, swelling (edema). These are the acute effects. Long-term exposure may result in respiratory diseases like—chronic bronchitis, aggravated asthma, emphysema, pulmonary fibrosis and increased stress on heart. Particulate matter potentiates the effect of SO<sub>2</sub>. The gas settles on the particles and reaches the deeper parts of respiratory system. Hence, the toxicity of low concentration of SO<sub>2</sub> can significantly increase, in the presence of particulate matter.

#### **Irritants and swelling:**

The exhaust of buses, trucks and two wheelers causes eye and lung irritation. This is due to oxides of nitrogen. Inhalation in large amounts may give rise to gum inflammation, internal bleeding, pneumonia and cancer. NO oxidizes lipids in the cells. So the cell membranes are disrupted leading to respiratory edema.

#### **Deleterious effects of lead concentrations:**

WHO recommends that lead concentrations in air should be < 10 units. It is estimated that 18 million children in developing countries are affected by air-lead emissions and poisoning. It can cause permanent brain damage, reduction in normal I.Q. Increased lead absorption increases the deficiency of iron, calcium, and Zinc. It can aggravate or cause anemic, colic or abdominal pain, neurological problems, hypertension and heart diseases, stunted growth, kidney damage, multi system damage and behavioral disturbances. Populations at great risk of lead absorption are malnourished, anemic children, industrial workers, squatters, platform dwellers, street vendors, auto drivers, and traffic police. The sources of lead can be from air-emissions (leaded petrol), drinking water from old, corroded lead pipes, lead from paints, toys and even pets, newspaper and newsprint ink, cosmetics like sindoor, lead cooking vessels, vegetables grown in lead polluted soils, acid foods like vinegar and fruit juices in lead containers, canned foods (in lead containers) and adulterated turmeric (mixed with lead!).

#### **Carbon monoxide:**

Carbon monoxide is one of the most poisonous gases. When it enters blood circulation it competitively inhibits the combining of oxygen with hemoglobin. Its affinity for hemoglobin is more than 200 times that of oxygen. That is why even extremely low levels of CO are not safe. High concentrations of CO slow down physical and mental activities and may cause asphyxiation, heart and brain damage.

#### **Ozone and peroxyacyl Nitrate:**

Ozone and peroxyacyl Nitrate (PAN) have a remarkable degree of biological activity. Even very small concentration of PAN or ozone causes irritation of eyes. Ozone causes cough, headache,

weakness, difficulty in breathing, bleeding, dry throat and constriction of respiratory passage and weakens the lung tissues.

### **Visibility and pollution:**

Dust, smoke and other suspended particulate matter reduces visibility. Fly ash also affects visibility by intercepting and scattering solar radiation. Reduction in visibility results in economic burden because air traffic, shipping, harbour operation and road traffic are adversely affected. Certain aerosols such as sulphuric acid mist, ammonium sulphate mist and water vapours influence the vertical temperature profile in the atmosphere, which affects thermal mixing, dispersal and the build up of pollutants. Aerosols also affect cloud formation and weather. The effects of particulate matter depend upon its nature and size. They cause irritation reactions. Fumes of toxic metals like lead, mercury, zinc and manganese as well as oxides of antimony, arsenic, Copper etc. are extremely harmful.

### **Smoking:**

Air is also polluted due to smoking. Lung cancer, various respiratory and cardiac problems are linked with smoking. Non-smokers have as much risk if they live around a smoker. This is called passive smoking. Recent studies conducted in Gujarat villages have indicated that the rural house wives, their children and the old parents who spend considerable time inside the unventilated house / kitchen are exposed to an alarmingly higher level of air pollution load which is higher than even the outdoor air pollution load in industrial countries. For example, the indoor air pollution load in Gujarat villages is estimated to be equivalent to smoking 10 to 15 packets of cigarettes per day. Later, clinical studies confirmed the correlation between the smoke level and the diseases of lungs and eyes.

### **Gas Leakage in chemical plants:**

Accidents in chemical plants are becoming more common now, in spite of our legislation and monitoring. A large number of people are affected because pollutants get released in large quantities and cause acute health effects. E.g. MIC Plant leak in Bhopal.

### **Synergetic effects of SO<sub>2</sub>, SO<sub>3</sub>, and HF**

Air pollutants like SO<sub>2</sub>, O<sub>3</sub> and NO<sub>2</sub> are strong oxidants and can bring about significant changes in plant cell chemistry. The general effects of pollutants are as follows: damage to leaves, inhibition of photosynthesis, reduced nutrient uptake, leaching of plant nutrients in soil, release of poisonous metal ions that are normally bound to the soil and killing of essential microorganisms in the soil.

When air gets contaminated with several pollutants from a single source, damages result from the cumulative effect of two or more gases.

Since SO<sub>2</sub>, NO<sub>2</sub> and O<sub>3</sub> are strong oxidants; they soil, fade and deteriorate fabrics. Sulphur dioxide affects leather and plastic also. Ozone cracks windshield wipers, tires and other rubber products. Hydrogen sulphide reacts with metallic paints and tarnishes them by forming metallic sulphides. It tarnishes silverware and jewellery also.

Scientists in our country are working on plants, particularly higher plants, in order to identify species for degree of susceptibility, tolerance/resistance etc. The identified tolerant species can be used for landscaping polluted areas, while susceptible intolerant species can be used as bio-indicators of pollution.

#### **Effects on plants:**

Pollutants affect plants adversely. However, plants can also be used for controlling pollution. Certain plants collect dust and thus filter out dust, soot, smoke and many other particulate matter in the air. Evergreen trees with simple leaves having rough and hairy surface are better dust collectors than deciduous trees with compound leaves having smooth surface. Such trees can be used as green belt for abatement of pollution.

#### **Effects on Animals:**

Biochemical and physiological processes in other animals, particularly in mammals are similar to human beings. So we can presume that wildlife and domestic animals if exposed to pollutants will be affected equally. It has been shown that animals grazing along major highways are poisoned by lead from automobile

exhaust. Livestock pastured in and around smelters are poisoned with metals. Poisoning due to lead, fluoride and arsenic causes damages in farm animals.

### **Effects on the Ecosystem:**

The effects of pollutants on ecosystem become visible after a long period of exposure. In highly industrialized countries the vegetation has been exposed to pollutants for several years. Consequently their devastating effects on terrestrial and aquatic ecosystem have long been observed. These are mainly due to wet (acids like sulphuric and nitric acid dissolved in water) or dry (gases affecting directly vegetation and soil) deposition of acid in combination with other air pollutants such as O<sub>3</sub>, hydrogen fluoride (HF) and particulates. The third world countries like India are beginning to realise similar impacts due to rapid rates of urbanization in the recent past.

Sulphuric acid reacts with metals and their weak salts and forms corresponding sulphates. In this way, in air-polluted areas with SO<sub>2</sub>, aluminium metal can form aluminum sulphate and limestone and marble can form calcium sulphate called gypsum. Such reactions have caused damage to buildings, sculptures and other historical monuments made up of stone, plaster, marble or metal painted glass works. Some of them are from middle ages or even older. For example, the stone in the Parthenon in Athens has deteriorated more in the past 50 years from air pollution than it had in the previous 2000 years. Similarly, the statue of liberty, USA is corroded from SO<sub>2</sub> and NO<sub>2</sub> and Taj Mahal (one of the wonders in the world, constructed in 17<sup>th</sup> century) from SO<sub>2</sub> emitted by Mathura refineries in the recent past. The sand stone statues get covered with black coating that contains large amounts of gypsum.

Air pollution is directly or indirectly linked to the emerging global environmental problems such as global warming, acid rain and Ozone depletion. These will be discussed in unit 3.

### **Water pollution**

Water is one of the most basic-needs for the survival of all living organisms. Besides water found in the body of the organisms. Water is used for agricultural, domestic community, commercial, industrial and recreational purposes. The sources of water pollution include point and non-point sources like discharges from industries

and storm water respectively. While pollution from point sources can be controlled, it is difficult to control pollution from non-point sources such as agriculture run-off, leaching from waste disposal sites and storm water.

#### **Surface and sub-surface water:**

Both the surface and sub-surface waters are polluted due to various human activities such as use of agro-chemicals, industrial wastes and pollutants and domestic sewage. Rapid increase in population, intensive agriculture, growing industrialization and urbanization has resulted in progressive deterioration in the quality of water in our natural reservoirs. The total waste water "generation from domestic sources in class I towns is 16.27 billion liters and of this a mere 25% is treated. The increase in treatment capacities have also not shown a commensurate increase as the share of wastewater, which is untreated and disposed into our surface water bodies, has increased from 61% in 1978-79 to 76% in 1994-95. This would inevitably pollute the surface as well as ground water bodies that meet our daily requirements. Ground water, once polluted to a greater degree would be impossible to clean up, since it contains a few decomposing microbes and is not exposed to sunlight, does not have strong water flow or any of the other natural purification processes that cleanse the surface water. The fact that mineral water bottles are becoming popular in urban and sub-urban areas indicates the state of affairs.

The common sources of water pollution are domestic sewage, industrial effluents, agricultural run-off, air-pollution (acid rain), bilge water from ships/ boats, passenger trains, oil pollution (leakage / accidents / war etc.)

#### **Major types of water pollutants:**

The following are the major types of water pollutants:

1. Organic wastes - domestic sewage, industrial sewage-of plant / animal origin (Food processing industries, distilleries) - high BOD and low O<sub>2</sub> (optimum O<sub>2</sub> level 4-6 ppm)
2. Living agents - Bacteria, -: viruses and other micro-organisms can cause water-born diseases eg. vibrio cholerae, Myco bacterium tuberculum, polio virusus and some algae

3. Plant nutrients -  $N_2$  and P from agricultural run-off and fertiliser factories Eutrophication (sewage also contain  $N_2$  and P)

4. Synthetic organic chemicals - Insecticides, herbicides, fungicides, r-odenticides, nomatocides - with higher stability and persistence which aggravate the problems of pollution e.g. DOT, dieldrin etc.

5. Inorganic chemical and mineral substances - cause hardness of water, corrosive effects - metals, metal salts, acids, solid particulate matter etc. e.g. Mercury

6. Sediments - Deforestation and soil erosion - soil slips - suspended solids from sediments are at least 700 times greater than those contributed by sewage: this will affect BOD, light, respiration, food availability, behavior; this will also induce disruption of transport on roads, siltation of dams, impacts on settlements and agro-ecosystems.

7. Radioactive materials from power stations, research centres / laboratories, industries, hospitals

8. Thermal pollution - hot water from power plants; the deep cold water from storage reservoirs are used for cooling the power plants causing the surface water temperature to raise which will have physiological effects on organisms e.g. Sacremont valley, California - rice growth is affected

#### **Industrial sector and the water pollution:**

Water pollution, in the industrial sector is concentrated within a few sub sectors mainly in the form of toxic wastes and organic pollutants. Of the total pollution load generated by industrial sub sectors, 40%-45% is contributed by the processing of industrial chemicals. In terms of the total organic pollution, expressed as BOD, nearly 40% arises from the food industries followed by industrial chemicals and the pulp and paper industry. Other major sector of concern is that of small-scale industries with more than 2 million units where pollution abatement has been neglected so far. Depending on the traditional crafts and culture of the area, small-scale industries like chemical, textiles, food processing and tanneries are; found in large clusters in different states. States with over a lakh registered small-scale industries include Andhra Pradesh, Gujarat, Madhya. Pradesh, Punjab, Tamil Nadu, Uttar

Pradesh, and West Bengal. Of these very few of the clusters have opted for CETPs (Common Effluent Treatment Plants) to control water pollution but most of these CETPs either do not function at all or do not treat effluents to the desired quality.

#### **Fertilizers and water pollution:**

Presently the institutional mechanisms to address pollution in the agriculture sector are also missing, as the sector is out of the ambit of the pollution control boards. The problem is acute in the riparian states of Punjab, Haryana, Uttar Pradesh and Tamil Nadu. Excessive use of fertilizers has led to an increase in the levels of nitrates in the shallow groundwater sources. The nitrate content of well water in a few districts of Uttar Pradesh, Haryana, and Punjab is far beyond the standard prescribed safe limit of 45 mg/litre. Severe degradation of ground water sources is also resulting from dumped solid wastes and human wastes in dug wells. 91% of the slum households, have no separate latrine in India and resort to open defecation, causing faecal pollution and spreading associated diseases. It is estimated that in India about 70% of our available surface water is polluted (will be definitely more for urban areas). WHO estimates that 80% of the illness in our-country could be prevented if safe potable water is made available to all. World Resources Institute (1990) estimates that about 30-60% of the poorest urban population globally has no direct access to safe drinking water.

#### **Degradation in the quality of water sources:**

Pressures due to inadequate collection and inefficient treatment of domestic wastewater, discharge of highly complex wastes from industries and the polluted runoff from agricultural fields, have resulted in considerable degradation in the, quality of water sources. Indicators of this deterioration include depletion of oxygen, excessive presence of pathogens /indicator species, settling of suspended material during lean flow conditions, oil, grease or any other visible particles and bad odour.

#### **Contamination in the water sources:**

If one bathes in the lower most reaches of the Ganga in West Bengal, especially in the Bhagirathi - Hooghly region, he / she is likely to be affected by a spate of water born diseases like

cholera, amoebic dysentery, viral hepatitis, polio, typhoid and some viral diseases.

Annually, approximately 100 million holidaymakers travel to the coasts of the Mediterranean region (Southern Europe, Turkey, Middle East, North Africa). The Mediterranean has become one of the most polluted seas in the *world* due to the following reasons:

- 85% of the wastewaters near the coasts are led directly into the sea without purifying.
- The microbial pollution is the most widespread type of pollution. UNEP studies indicate that 25% of the beaches do not meet the safety standards (for faecal coliforms: 1000 coli/100 ml).
- *Other polluting substances are nitrogen (800,000 tons/per year), phosphorus (320,000 tons), washing powder (60,000 tons), phenol (12,000 tons), and lead (3,800 tons).*
- One third of the entire oil waste load that is dumped into the oceans, million tons per year flow into the Mediterranean.

#### **Controlling water pollution:**

Adopting the following strategies water pollution can be controlled.

- Prevention at source rather than end of the pipeline technologies i.e. pollution control at source rather than pollution treatment.
- Recycling the recyclable pollutants e.g. biogas from domestic sewage, refuse derived fuel from municipal solid wastes etc.
- Fiscal policy changes - pollution taxes, subsidies etc.
- Adoption of appropriate pollution control technologies
- Common effluent treatment plants (CFTP) for small scale industries

#### **4.3 Noise pollution**

Noise pollution is 'the unwanted sound present in the atmosphere leading to adverse health effects on individuals or populations'. Noise pollution can result from either natural or

anthropogenic processes. The natural processes are volcanic activity, earthquakes, thunder, wind- /storm, sea waves. The anthropogenic causes include industries, domestic sector, traffic, and community activities.

Noise can be classified into the following types:

- Ambient or steady state noise (background noise )
- Fluctuating noise
- Intermittent Noise (noise with breaks- noise /silence, noise /silence and
- Impulsive Noise.

Noise can be measured using noise level meter. There are two basic characterizes of sound i.e. intensity or loudness (dB), frequency (Hz). Table 2.2 provides the intensity of sound from various sources.

**Table 2.2. Intensity of sound from various sources**

SOURCE	INTENSITY (dB)	SOURCE	INTENSITY (dB)
Breathing	10	Soft whisper	20
Library	30	Normal Talk	35-60
Telephone	60	Alarm Clock	80
Market noises	72-82	Public meeting	85-90
Train whistle	110	Pneumatic drill	120
Diwali Crackers	120	Commercial jet	140
Space raket (launching)	180		

The following are the health hazards due to various levels of noise intensity

**Table 2.3 Health Hazards**

NOISE INTENSITY (dB)	HEALTH HAZARD

80		Annoyance	
90		Hearing difficulty	
110		Stimulation of skin receptors	
130-135		Nausea, Vomiting, Dizziness	
160		Rupture of eardrum	
180		Major permanent damage in a short time	

The upper limits of noise are 85 to 90 dB for 8hrs; 100 dB for 45 minutes; 20-30dB for the broad casting stations - 40 dB for hospitals and hotels; 45 dB for offices and libraries. However, the observed noise levels in metropolitan cities are very high e.g. New Delhi- 90dB; Bombay 78dB; Rio-di- jenero- 130dB.

### **Effects of Noise pollution on humans:**

The following are the effects of noise pollution on human health:

- Auditory effects such as conductive deafness, perceptive hearing loss, noise induced temporary threshold shifts, noise induced permanent threshold shifts, noise trauma (or) acoustic trauma:
- Non-auditory effects include interference with speech, decrease in work efficiency, physiological disorders. The physiological effects include effects on nervous system, headache, effect on stomach, heart attack, effect on fetus.

### **Controlling noises**

Noise cannot be tolerated for many tourism activities. Noise pollution can be controlled and the impacts minimized by adopting the following strategies:

- Use of silencers
- Use of acoustic tiles

- Ear plugs and ear muffs
- Job rotation
- Trees as sound energy absorbers
- Environmental education and
- Control through environmental legislation.

### **Solid wastes**

The growth in MSW (municipal solid waste) generation in India has outpaced the growth in population in the recent years. The daily per capital generation of municipal solid waste in India ranges from about 100 g in small towns to 500 g in large towns. The recyclable content of waste ranges from 13% to 20%. The survey conducted by CPCB puts total municipal waste generation from Class I and II cities to around 18 million tonnes in 1997. The reason for this escalating trend is a mix of the changing lifestyles, food habits and changes in standard of living,

### **Observations of TERI:**

The TERI 'Green India 2047' study made the following observations on the situation of municipal solid waste management in the country.

- increasing urbanization and changing lifestyles has led to the solid waste generated in Indian cities having increased from 6 million tones in 1947 to 47.8 million tones in 1997.
- The production and consumption of plastic increased over 70 times between 1960 and 1995.
- The collection of municipal solid waste is inefficient (more than 25% of the total is not collected at all), its transport is inadequate, and its disposal is unscientific.
- More than one-fourth of the municipal solid waste (MSW) is not collected at all, and the landfills to dispose of the waste are neither well equipped nor managed efficiently.

### **Types of solid wastes:**

The characteristics of MSW collected from any area depends on a number of factors such as food habits, cultural traditions of inhabitants, lifestyles, climate, etc. Solid wastes are generated due to various tourism activities. The most important solid wastes generated include municipal solid wastes, industrial wastes etc. Municipal solid wastes are a mixture of -organic wastes derived from the kitchen, market etc., paper, glass, rags and other waste materials. Plastics are becoming one among the predominant solid wastes produced by humans. It is one of the *most versatile and commonest products of modern technology* used in home, transport, and infrastructure. Hydro carbon molecules found oil and natural gas are the basic building blocks for plastics (can be theoretically made from coal and wood also but will be technology complex and costly).

Current per capita consumption of plastics in India stands at 0.64Kg whereas the world average is 13.7Kg. Germans consume 85 kg/yr. *On all India basis, plastics account for 4-5 % solid waste* where as for Kerela, 40 % of the municipal and corporation waste is plastics.

Milk, mineral water, edible oils and ghee are sold in PVC plastic sachets and we are using plastic PET bottles for storing edible materials, drinking water etc. Since they are waterproof and easy to carry, it is an item of choice for any tourist. However, *plastics is one of the most non-bio degradable materials* man has ever produced; the production process involve many dangerous toxic chemicals; recycling is often costly; burning releases dangerous and toxic air pollutants (dioxin compounds - tetra chloro-dibenuyo-p-dioxin- one of the most toxic chemicals which can weaken the immune systems so that carcinogens can act easily). Landfills cannot be used for disposal of plastics since plastics like PVC decompose slowly ( c. 500 yrs). Table 2,4 compares the decomposition rates of different sold wastes.

**Table 2.4. Rate of decomposition of different solid wastes**

Material		Time scale	
Styrofoam		Eternity	
Glass bottle		Unkn own	

Plastic bag		1 million years	
Disposable diaper		500-600 yrs.	
Aluminum can		200-500 yrs.	
Tin can		80-100 yrs.	
Leather shoe		40-50 yrs.	
Wood		10-15 yrs.	
Nylon socks		1 yr	
Cotton rags		1 month	
Paper bag		1 month	
Banana peel		3-4 weeks	

Red and yellow coloured plastics contain cadmium as a pigment causing pollution of ground water aquifers; burning of polyurethane foam releases extremely toxic toluene diisocyanate and 57 carcinogens. Yet, it is a common sight in our suburbs witnessing the burning of various types of plastics such as plastic covers, tyres etc. especially during winter to 'escape' from cold. It is also frequently observed that MSWS are burnt on the road sides and they contain plastics. In 1986, EPA of USA ranked 20 chemicals that created the most hazardous wastes and 5 of the top

6 ones among them were found to be commonly used in the plastic industry.

Recycling plastics saves twice as much energy as burning them in an incinerator - 85 to 95% energy savings can be obtained if recycled yet it is not cost effective for most of the plastics. Recycling is difficult because several polymers are used in combination. The percentage of plastics recycled for W.; Germany, USA and India are 7%, 1% and <1% respectively.

Tetra pack is popularly used as a disposable container for cool drinks, oil, milk etc. The wax paper in the tetra pack can be easily biodegraded but not the plastic and the aluminum, which can poison the fresh water. This will lead to memory loss, liver / kidney disorder.

Nobody knows whether the various plastic containers, slippers, dolls, suit cases, boxes, we use everyday (which are recycled plastics) are harmful or not. Many countries have banned hazardous plastics; in Italy for example, 200 communities have banned plastic bags; in Denmark, plastic bottles are banned; many European countries like Netherlands have imposed control on the use of plastics. In India also use of plastic bags and satchels are discouraged. Awareness towards this is slowly spreading.

Except plastics, considerable potential exists for recycling of solid wastes e.g. biogas generation; refuse derived fuel, briquettes, recycled paper and glass etc.

### **Solid waste Disposal:**

Disposal of solid waste is a major issue of concern in India. Respective municipalities collect MSW in cities and transport it to the designated disposal sites, which is normally a low-lying area on the outskirts of a city. The choice of a disposal site is more a matter of what is available than what is suitable. Only a few cities follow good practices such as organized dumping of wastes, using mechanized equipment for leveling and compacting the wastes, and covering the top layer with earth before compacting it further. Of late, some cities have also started to practice composting the organic fraction of waste. In many cities, the MSWS are simply burnt to reduce their volume.

### **Management of biomedical waste:**

Management of biomedical waste is another issue of concern for municipalities. This waste produced in hospitals generally has high contamination of pathogens, making it hazardous. It also includes scalpels, needles, bandages, and other wastes from operating theatres and laboratories as well as infectious items, e.g. amputated body-parts, body fluids, cultures of contagious viruses, excreta from patients with highly contagious diseases, etc. Though-waste from hospitals and nursing homes are required to be collected and treated separately, in most cities and towns such waste continues to form a part of the MSW in absence of any dedicated disposal facilities for hospital waste. The MoEF, Government of India has issued the Municipal Solid Wastes (management and handling) Rules in the year 2000, which identify the CPCB (Central Pollution Control Board) as the agency to monitor the implementation of these rules. For the management of bio-medical waste, the MoEF has notified Bio-Medical Waste (management and handling) Rules in 1998 under Sections 6, 8 and 25 of the Environment (Protection) Act of 1986. However, they are hardly followed.

### **Hazardous and Non-Hazardous wastes:**

There are two Types of wastes, based on their bio-hazards - non-hazardous wastes and hazardous wastes. Non-hazardous waste can be either biodegradable or non-biodegradable. The major industries in urban areas that generate substantial amounts of biodegradable solid wastes are fruit processing, cotton mills, paper mills, sugar mills, and textile factories. The major generators of non-biodegradable industrial solid waste are thermal power plants producing coal ash, integrated iron and steel mills producing blast furnace slag and steel melting slag, such non-ferrous industries as aluminum, zinc, and copper, which produce red mud and tailings, and fertilizer and allied industries which produce gypsum. Some of the wastes genera to by industries are deemed to be hazardous wastes because they contain substances that are toxic to plants and animals or are flammable, corrosive, explosive or highly reactive, chemically.

Reliable data on the quantity of solid wastes generated by small-scale industries are scarce, as these industries have

mushroomed widely; it is, however assumed that they generate as much industrial waste as that generated by medium- and large-sized industries.

**Controlling pollution:**

**Benefits of preventing pollution:**

It is always better to prevent the pollution at source rather than treating the pollutants after they are released into the environment. The latter option is called end of the pipeline strategy and is obviously costly and time consuming. A recent evaluation of 500 industrial case studies at global level shows that the benefits for companies that reduce waste and prevent pollution can include:

- Lower costs of raw materials
- Lower energy costs
- Lower waste disposal costs and reduced dependency on waste treatment and disposal facilities
  
- Reduced or no future liability for cleanup of or contamination by buried wastes
- Fewer and lesser regulatory complications
- Lower operational and maintenance costs
- Lower employee, public, and environmental risks and expenses, both present and future
- Reduced liability insurance costs
- Better employee morale
- Higher productivity and product quality.

In these cases, wastes were reduced by 85% to 100%. The payback periods ranged from three years to one month. The firms involved include old industries and new high-tech enterprises. The methods used included incorporation of in-line technologies, and process modifications (in which the previously used substance is replaced with a new, less polluting substance). The technologies for some of the changes were readily available, others were newly developed proprietary processes. Some companies that developed new processes have gone on to patent them and sell or lease them

to others. Thus they solved their own problems and developed a new product at the same time. However, not all waste streams can be easily reduced with current technologies; some will require intensive research to develop less polluting processes. Reduced pollution levels are desirable for the tourism sector.

### **Pollution control and management:**

There are some silver linings in pollution control and management. Notable among these recent developments are:

- **Bio/photo remediation** - using plants or other organisms (e.g. water hyacinth, white rat fungi) animals and microbes that are hyper accumulator of toxic metals tolerate, take up and concentrate toxic metals such as Lead, I and Mercury up to a 100 fold concentration. At times, complex toxic chemicals are broken down into simpler lesser toxic chemicals by these plants.
- **Biogas from organic wastes** - Faeces, sewage, food processing wastes, carcass wastes, market vegetable wastes etc. can be used as feed stock in anaerobic digestives to produce biogas (fuel) and slurry (fertilizer)

### **CHECK YOUR PROGRESS**

1. Discuss the conditions under which tourism is causing negative impacts in India. What are your suggestions for reducing them?
2. What are the impacts of tourism activities on water resources? How the negative impacts can be controlled?
3. Discuss how various tourism activities either directly or indirectly cause air pollution. Describe their impacts and control measures.
4. List the sources and types of solid wastes generated by various tourism activities. What are their impacts? How would you manage solid wastes?
5. Define noise pollution, and describe its causes and impacts.

## LESSON - 5

### MEASURES TO CONTROL POLLUTION

The causes and consequences of environmental degradation are interwoven in complex social, technological and environmental factors. There is a felt need for environmental protection. Various regulatory and promotional measures have been taken in our country to control pollution over the past decades since Independence. They are:

#### Legal

The following Acts have been passed by the Government of India:

The Wildlife (Protection) Act amended in 1983, 1986 and 1991.

The Water (Prevention and Control of Pollution Act) 1974 amended in 1988

The Forest (Conservation) Act, 1980 amended in 1988

The Air (Prevention and Control of Pollution) Act, 1981.

The Environment (Protection Act), 1986.

The Motor Vehicle Act, 1938 amended in 1988

The Public Liability Insurance Act, 1991.

A Notification on the Coastal Regulation Zone, 1991.

#### Institutions

The following Departments have been established.

Department of Environment in 1980 and the Integrated Ministry of Environment and Forests in 1985.

Department of Science and Technology, Department of agriculture and Cooperation, Department of Biotechnology, Department of Ocean Development, Department of Space, Department of Non-Conventional Energy Sources, Energy Management Centre, Council of Scientific and Industrial Research

at the Centre, Departments of Environment at the State and Union Territory Level.

Central Pollution Control Board, and State Pollution Control Boards and Central Forestry Board.

Indian Council of Forestry Research and Education with specialized Institutions for Research in Arid Zone, forestry, moist and deciduous fruits, wood technology, genetic tree breeding and deciduous forests.

Forest Survey of India (FSI) and the Wild Life Institute of India (WIL) in addition to the existing organizations like Botanical Survey of India (BSI) and Zoological Survey of India (ZSI)

National Land house and Wasteland Council

National Wasteland Development Board

National Board of Wildlife

National Museum of Wildlife History, Centre for Environmental Education, Institute for Himalayan Environment and Development and Centres of Excellence in specialized subject areas are among the various institutions established in India.

### **Conservation of Forests and Wildlife**

Adoption of a new Forest Policy (1988) with the principal aim of ensuring ecological balance through conservation of biological diversity, soil and water management, increase of tree cover, meeting the requirements of the rural and tribal population, increase in the productivity, efficient utilization of forest produce, substitution of wood and people's involvement for achieving these objectives.

Under the Forest (Conservation) Act, 1980 stringent provisions for preventing diversion of forest land for any other purposes were made.

National Wastelands Boards to guide and oversee the wasteland; development programme by adopting a mission approach for enlisting people's; participation, harnessing the inputs of science and technology and achieving inter disciplinary co-ordination in programme planning and implementation.

Formulation of a wildlife action has also been undertaken. An Establishment of national parks and sanctuaries covering about 4 percent of the country's area was envisaged. The Government has also undertaken eco development plans for sanctuaries and National Parks. Identification of biographical zones in the country for establishing a network of protected areas including seven biosphere reserves set up so far had been made. There were management plans for identified wetlands mangrove areas and coral reefs. There was a formulation of a National River Action Plan.

### **Land and Soil**

Surveys are made by the All India Soil and Land Use Survey Organization Treatment of catchment areas in selected river valley projects and integrated watershed management projects in catchment areas of flood prone rivers are also undertaken. Assistance to States to control shifting cultivation has also been made. Assistance for reclamation and development of ravine areas has also been made. Drought prone area programme and Desert development programme have also been undertaken.

### **Environmental Impact Assessment**

Establishment of procedures for environmental impact assessment and clearance with regard to selected types of projects requiring approval of the Government of India. Prior clearance of projects requiring diversion of forests for non-forest purposes under the Forest (Conservation) Act, 1980 was also stipulated. Formulation of environmental guidelines for projects in various sectors have also been framed.

### **Other Activities**

Eco-task forces of ex-servicemen for ecological restoration through afforestation and soil conservation have been constituted. National Environmental Awareness Campaigns for creating environmental awareness through non-governmental organizations have also been arranged. Surveys and research studies on various issues relating to stem environmental degradation have been arranged.

## **Other Strategies for Action**

### **Population Control**

Unabated population growth not only adds to the economic burden for all developmental activities but also adds to the environmental degradation in the locality. A comprehensive programme with strong political backing and appropriate social-economic measures fully utilizing the available scientific know-how, simultaneously making efforts for developing new methodologies and supported by modern techniques in this most difficult area has to be formulated. Population control should be a national mission for the coming decades. Along with the usual population control measures, environmental sanitation, prevention and control of communicable diseases through integrated vector control and health education should be undertaken. Also the decentralized renewable energy devices that enhance quality of life in remote pockets while taking special care of the health needs of women should be adopted.

### **Conservation of Natural Resources**

Amelioration of water-logged and salt affected lands, command area development, protection of good agricultural land against diversion to urban and other uses, prevention of land fragmentation, maintenance of sustained productivity of soil and conservation of lands with forests and vegetal cover are the integral components of sustainable management. The importance of water as a finite, though a renewable resource must be clearly recognized. Land and water use are to be considered together, particularly in the context of recurring droughts and floods. Water conservation measures, discipline on use of water, economizing the consumption of water in the households, agriculture and industry and appropriate recycling would be essential.

### **Sustainable use of land and water**

The following steps should be taken for sustainable use of land and water:

Classification, zoning, and apportionment of land for designated uses such as agriculture, forestry, grassland. Green

areas, industrial activities, catchment areas and water sheds and human settlements based on assessment of their capabilities and environmental considerations should be planned and executed. For appropriate land uses to protect the soil from erosion, pollution and degradation, laws should be enacted. Rural people should be involved in social forestry programmes, land use planning, afforestation etc. Country-wide campaign to minimize soil and run-off losses by carrying out extensive works like contour trenching, terracing, construction of small storages, catchment, treatment and protection of the vegetal cover in the catchments and watersheds should be undertaken.

### **Atmosphere**

For preservation and control of atmospheric pollution including noise pollution the following steps have to be made:

Clean fuels, clean technologies, energy efficient devices and air and noise pollution control systems should be set up. Source specific and area-wise air quality standards and time bound plans to prevent and control pollution should be arranged. Incentives for environmentally benign substitutes technologies and energy conservation should be made. Raising green belts with pollution tolerant species and developing, coping mechanisms for future climatic changes as a result of increased emission of carbon dioxide and greenhouse gases should also be thought of. Preventing the ozone depletion and other gaseous effects in the atmosphere on Indian sub-continent should be taken up.

### **Biodiversity**

Plans for preserving biodiversity and to save endangered plant and animal species as well habitats of biological resources should be taken up. Conservation of biodiversity through a network of protected areas including Biosphere Reserves, Main Reserves National Parks, Sanctuaries, Gene Reservation Centres, Wetlands, Coral Reefs and such others national habitats of biodiversity should be made. Taxonomic and ecological studies on the flora and fauna with adequate emphasis on the lower vertebrate and invertebrate and micro-flora which are important in contributing to the healthy maintenance of ecosystems should be taken up.

## **Biomass**

The biomass requirements of the rural poor such fuel wood, timber, fodder and fibre etc., should be met with sufficiently. For this the following steps should be taken. The fuel wood species should be raised and provision of alternatives to reduce dependence on fuel wood should be made. Technologies should be developed to enhance the productivity and efficiency of use of all biomass resources both terrestrial and marine should be planned. Action should be taken to curtail the supply of subsidized bio-mass based resources to industrial consumers.

## **Industrial Development**

Industrial development and environmental considerations should be integrated with each other. The action plan should include a mix of promotional and regulatory steps which are as follows:

Rural urban migration should be checked by providing infrastructural and gainful opportunities for the people in the rural areas. Establishment of secondary cities and with required infrastructural facilities and employment opportunities by developing human settlements perspective plan at the national and state level. Towns should be taken up. Indigenous building materials and appropriate construction technologies should be arranged. Recycling of existing by revising building and planning codes supporting small scale industries, skill up gradation of artisans and people oriented delivery systems should be planned. Gardens and parks should be raised in the towns and open spaces for public use and for promotion of environmental consciousness. Deterrent measures to discourage indiscriminate growth of human settlement and polluting industries in vulnerable areas such as hilly regions and coastal stretches should be enforced. Creation and strengthening of health care facilities for all sections of society both in rural and urban areas and establishment of monitoring systems and epidemiological data to ensure adequate early warning systems for prevention and control of diseases should be planned.

## **International Co-operation**

Environmental problems of global nature, ozone layer depletion, global warming and climatic change, destruction of biological diversity, trans boundary air pollution, marine pollution and land-based marine pollution, trans boundary movement of hazardous substances have become a major threat to sustainable development. In India environmentalists firmly believe that the process of industrialization and the continued profligacy of industrialized economies that have created the problems which threaten our planet and our life forms. *Non-renewable natural resources* in disproportionate quantities are used. They create discharges and emissions which disturb delicate balances in ecosystems and atmospheric equilibrium. The Indian approach to global environmental problems is generally in keeping with other developing countries and has the following basic principles.

### **Regulatory measures**

International regulatory measures in areas such as ozone depletion and climatic change are highly useful, if the special situation in certain other sectors, like forestry, international regulations are not workable and acceptable. But in other areas such as forestry such a regulatory regime is neither workable nor acceptable. *In such sectors, reduction of international economic and commercial pressures which generate unsustainable exploitation and additional financial resources to tackle the damage already done should be channeled in these areas.*

India's traditional lifestyle has always emphasized conservation of plant and animal life, waste minimization, recycling, *simplicity in food habits and other such environment-friendly attitudes.* The economic development will bring in new life styles which might require more intensive resource use. We have to minimize the adverse impact of the development through legislation and control, impact assessment and monitoring, education and awareness. At the same time, we have to preserve the traditional Indian ethos reflected in the modern lifestyles. Financial resources from international agencies in an adequate measure, and transfer of technology which is environmentally sound, will help India to circumvent environmental problems.

### **Support Policies and Systems**

The Government should think of support policies and systems for filling up gaps in the existing institutional set up, legislative instruments and enforcement mechanisms, research and development, mobilization of financial resources, creation of public awareness and training of professionals.

Such a programme of action needs close linkage between existing institutions at different levels. It will necessitate quick decision making on development projects based on assessment of their potential of rendering long-term sustainable benefits to the society at large. Existing laws and enforcement mechanisms should be subjected to periodic review to evaluate their adequacy and efficacy in the light of the changed circumstances and experience.

### **System of Resource Accounting**

A system of resource accounting along with the other exercise of cost benefit analyses should be taken up. Indicators of growth such as GNP and GDP should include a measure of depletion cost and value judgments in terms of environmental resources. It will require instruments and expertise evaluation and conscious trade-offs to meet the legitimate developmental works. The Government will prepare each year, a natural resources budget which will reflect the state and availability of resources like land, forests, water etc., and which will rationally allocate these resources in keeping with the principle of conservation and sustainable development.

### **Formal Education and Training**

Formal education and training programme in specialized areas of pollution control and environment management will be a continuing need. Intensive programme for education and training will need to be introduced in the universities, IIs and other professional institutions. Environmental education at the school level including training of teachers shall be an important component of educational programme.

### **Raising Public Awareness**

To raise public awareness on environmental issues and to promote people's participation in environmental activities and conservation of natural resources, development of environment education resource material and use of traditional and modern

media of communication need to be strengthened. A network of infrastructure education including development of orientation centers and provision of educational material for visitors at the national parks, sanctuaries and tiger reserves should be arranged.

### **Low Cost Environment Technologies**

Appropriate environment technologies at low cost inclusive of the possibilities opened up by the bio-technology, genetic engineering, information and material technologies and remote sensing tailored to the local environmental and socio-economic conditions should be introduced. Conscious efforts should be made to avoid displacement of local people. If such a displacement is *unavoidable, necessary measures should be taken to ensure their rehabilitation by providing suitable facilities.* The government should chalk out a programme to ensure that the displaced persons are conveniently accommodated and are economically better-off than *before and above poverty line as a result of rehabilitation.*

### **Co-opting NGOs**

NGOs at the district level should be involved in the management and dissemination of environmental information. Non-governmental organizations, citizens groups and village level institutions like forests panchayats, and Gram Sabha should be empowered with locus standi and support for mobilization of public opinion and participation in development activities. Women at the grassroots level should be actively involved in the conservation programmes which should be income generating self-financing and sustainable on a long term basis and the Government Departments, should have an NGOs cell for interaction with the NGOs.

The policies and programmes at the State and Central level should be drawn up keeping in view of the overall national policy considerations. A monitoring mechanism involving Central and state Government representatives will be set up for interaction as required for implementation of the policy initiatives. Above all, peoples movements to conserve their own environment, greater public and media concern for environmental issues and spread of environmental awareness among children and youth are needed to maintain our ecosystem without any degradation.

There are manmade hazards that are produced due to various activities ranging from intensive use of dangerous chemicals that cause bio-accumulation and bio-magnification to deforestation/removal of soil vegetal cover that trigger soil erosion, landslides, flood and drought. They need special attention as they can affect both the tourists and the resident population. At times, such impacts are becoming global in dimension- global warming, acid rain and ozone depletion:

### **Earthquake**

An earthquake is a shaking, trembling, or concussion, any violent blow of the earth, due to subterranean (lying beneath) causes, often accompanied by a rumbling noise. It is also called as earthdin, earthquake, and earthshock. The wave of shock sometimes traverses half a hemisphere, destroying cities and many thousand lives; part of the energy released produces seismic waves that travel outward in all directions from the point of initial rupture. These waves shake the ground as they pass by. An earthquake is felt if the shaking is strong enough to cause ground accelerations exceeding approximately 1.0 centimeter / second square.

In modern buildings, it is steel that gives a structure its flexibility. Not only may steel girders and beams be used, but steel reinforcing rods are threaded through walls, floors and concrete pillars. This sturdiness allows the building to bend in a quake, thus avoiding the damage to the buildings.

### **Hurricanes**

Hurricanes are tropical cyclones with winds that exceed 64 knots (74 mi/hr) and blow counterclockwise about their centers in the Northern hemisphere, and clockwise in the Southern hemisphere. Hurricanes are born over the warm waters of the tropical oceans, where humid air and converging winds fuel convective processes responsible for developing hurricanes. The recent Tsunami disaster has caused a great havoc in south Asian countries.

Whatever may be the natural disaster; a responsive warning system based on preparedness, which includes the following components are required

- Public Education - Information about-disasters-, their possible effect, and the appropriate precautions to take.
- Training programs should be provided for public servants who will have special responsibilities during disasters.
- Training aids (including booklets, films, posters, handouts, etc.) should be developed for the public school and university curricula, and public servants.
- Preparedness Plans - specific to community needs and to locally available staff, equipment and facilities.
- Develop a data collection and coordination system in anticipation of post disaster needs.

### **Human introduced hazards**

Among the disasters caused by human activities, the following are important - wars, civilian radioactive wastes, heavy metal pollution, persistent organic pollutants (POPS), deforestation, soil erosion, floods and droughts.

### **Civilian Radioactive wastes**

Civilian nuclear activities such as electricity generation also produce wastes that are difficult to handle. Used fuel rods can be reprocessed, but there are still large quantities of radioactive waste materials waiting in temporary storage sites. Since the 1960s, more than 200,000 tons of spent fuel has been produced by 400 reactors in 30 countries, and every year 10,000 tons are added.

### **Heavy metal pollution**

In the right concentrations, many metals are essential to life. In excess, these same chemicals can be poisonous. Similarly, chronic low exposures to heavy metals can have serious health effects in the long run. The main threats to human well-being are associated with lead, arsenic, cadmium and mercury and it is these substances that are targeted by international legislative bodies. Many-developed countries had significantly reduced lead levels in children by 1992; mainly by introducing lead-free fuel. However, lead pollution levels have been rising in the urban areas of many developing countries, with more than 90% of the children in some African cities, suffering from lead poisoning.

High concentrations of arsenic in drinking water have been documented in specific parts of Argentina, Canada, Chile, China, Japan, Mexico, the Philippines, India and the USA. The problem is particularly acute in West Bengal and Bangladesh, where an estimated 30 million people are drinking arsenic-poisoned water (WHO, 1997). Some 62% of wells supply arsenic-contaminated water above WHO's limits with some containing as much as 400 times the limit. The effects of arsenic include cardiovascular problems, skin cancer and other, skin effects, peripheral neuropathy and kidney damage. Cadmium exposure occurs mainly through cereals and vegetables grown on soils contaminated by mining activities and use of phosphorus fertilizers. Shellfish and animal organs also contain high levels of arsenic. Cadmium accumulates in the kidneys and is implicated in a range of kidney diseases.

Mercury accumulates at the top of aquatic and marine food chains and fish is the major source of dietary exposure. The principal health risks associated with mercury are damage to the nervous system, with such symptoms as uncontrollable shaking, muscle wasting, partial blindness, and deformities in children exposed in the womb. At levels well below WHO limits, it can damage the foetal and embryonic nervous systems with consequent learning difficulties, poor memory and shortened attention spans. Low-level exposures can also adversely affect male fertility. Mercury is a global problem. Most of the mercury found in high concentrations in the Everglades in Florida comes from thousands of Kms away, traveling on trade winds from Europe and Africa. Every spring, a toxic rain of mercury falls on the arctic, at the time when ecosystems are most active.

### **Persistent Organic Pollutants (POPs)**

One of the most pressing environmental issues today is that presented by persistent organic pollutants (POPs). POPs take a long time to break down in the environment and it is very difficult, if not impossible, to contain them, once they have been released. They are chemical substances that persist in the environment; bioaccumulate through the food web, and poses a risk of causing adverse effects to human health and the environment. With the evidence of long-range transport of these substances to regions where they have never been used or produced and the consequent threats they pose to the environment of the whole globe, the

international community has now, at several occasions called for urgent global actions to reduce and eliminate releases of these chemicals.

One of the most serious environmental POP-related crises is the widespread contamination of the arctic and Antarctic ecosystems, with high levels found in wildlife and people. POPs accumulate in the fat of seals and beluga whales, which are then eaten by Inuits.

Realizing the dangers involved in using and handling such toxic chemicals, the UNCED, 1992 has come out with a specific Chapter in Agenda 21 - the Chapter 19 - environmentally sound management of toxic chemicals, including prevention of illegal international traffic in toxic and dangerous products. The following are the highlights of the same:

- A substantial use of chemicals is essential to meet the social and economic goals of the world community and today's best practice demonstrates that they can be used widely in a cost-effective manner and with a high degree of safety, though work is still needed.
- Gross chemical contamination, with grave damage to human health, genetic structures and reproductive outcomes, and the environment, has in recent times been continuing within some of the world's most important industrial areas. Restoration will require major investment and development of new techniques.
- Several hundred priority chemicals or groups of chemicals, including major pollutants and contaminants of global significance, should be assessed, using current selection and assessment criteria.
- We have to evolve guidelines for acceptable exposure for a greater number of toxic chemicals, based on peer review and scientific consensus distinguishing between healths or environment based exposure limits and those relating to socio-economic factors.
- The broadest possible awareness of chemical risks is a prerequisite for achieving chemical safety. The principle of the right of the community and of workers to know those risks should be recognized. However, the right to know the identity of hazardous

ingredients should be balanced with industry's right to protect confidential business information.

- A considerable number of international bodies are involved in work on chemical safety. However, a significant strengthening of both national and international efforts is needed to achieve an environmentally sound management of chemicals. Six programme areas are proposed for the same:

1. Expanding and accelerating international assessment of chemical risks.
2. Harmonization of classification and labeling of chemicals.
3. Information exchange on toxic chemicals and chemical risks.
4. Establishment of risk reduction programmes.
5. Strengthening of national capabilities and Capacities for management of chemicals and
6. Prevention of illegal international traffic in toxic and dangerous products.

The six programme areas are together dependent for their successful implementation on intensive international work and improved coordination of current international activities, as well as on the identification and application of technical, scientific, educational and financial means, in particular for developing countries. To varying degrees, the programme areas involve hazard assessment (based on the intrinsic properties of chemicals), risk assessment (including assessment of exposure), risk acceptability and risk management.

Agenda 21 in its subsequent chapter - the Chapter 20 deals with environmentally sound management of hazardous wastes, including prevention of illegal international traffic in hazardous wastes. The following are the salient features of the same:

- Effective control of the generation, storage, treatment, recycling and reuse, transport, recovery and, disposal of hazardous wastes is of paramount importance for proper health, environmental protection and natural resource management, and sustainable development.

- Prevention of the generation of hazardous wastes and the rehabilitation of contaminated sites are the key elements, and both require knowledge, experienced people, facilities, financial resources and technical and scientific capacities.
- There is international concern that part of the international movement of hazardous wastes is being carried out in contravention of existing national legislation and international instruments to the detriment of the environment and public health of all countries, particularly developing countries.
- Monitoring and making regional integrated life-cycle assessments of the illegal traffic and its environmental and health implications are needed and that these should be linked with the United Nations Environment Programmes - UNEPs efforts at the international level.

### **Tropical deforestation**

The clearing of tropical forests has been going on in a large-scale in for many centuries. This process, known as deforestation, involves the cutting down, burning, and damaging of forests. The loss of tropical rain forest is more profound than merely destruction of beautiful areas. If the current rate of deforestation continues the world's rain forests will vanish within 100 years-causing unknown effects on global climate and eliminating the majority of plant and animal species on the planet.

Most of the forest clearing is done for agricultural purposes-grazing cattle and planting crops. Poor farmers chop down a small area (typically a few acres) and burn the tree trunks-a process called slash and burn agriculture. Intensive, or modern, agriculture on the other hand is practiced on a much larger scale, sometimes deforesting several square Kms at a time. Large cattle pastures often replace rain forests to grow beef for the world market. e.g. Indonesia.

There are other reasons for deforestation, such as to construct towns or dams which flood large areas. Yet, these latter cases constitute only a very small part of the total deforestation.

There are three basic steps to saving rainforests

- Sustainable development of selected standing forests

- Rehabilitation and increased productivity of once forested land:
- Establishment of protected areas

Today, those involved in conservation realize their former shortcomings and place emphasis on sustainable development of rainforest lands, to allow local people to benefit from the forests without destroying them. Conservation cannot come at the expense of local people; local people must be made both partners and beneficiaries in conservation, and not enemies of it. This strategy requires radical changes in the economic uses of the rainforest and those who determine forest policy. Success depends largely on long term planning, cooperation, and informed compromise among environmentalists, scientists, industry, developers, politicians, and local and indigenous peoples so reserves will have continuing support. Saving the rainforest will hinge on how reserves can be worked into the local fabric of life and how well, as intact systems, the forest can provide for the people that live around them. If managed properly, the rainforests can provide for many of the world's needs on a perpetual basis.

### **Soil erosion**

Soil erosion is the wearing away of the earth's surface by any natural process. The chief agent of erosion is running water; minor agents are glaciers, rain, the wind, and waves breaking against the coast. Deforestation, unsustainable methods of land use, mining, road laying and construction accelerate the rate of soil erosion.

Soil erosion is one of the most serious problems faced by mankind today. Soil erosion is a major environmental threat to the sustainability and productive capacity of agriculture.

The most effective control of wind and water erosion is to maintain plant cover on the soil surface throughout the year, especially during those periods when winds are apt to be dry and of high velocity. Increasing surface roughness and maintaining clods on the soil surface of cultivated land is at best only a temporary measure. More permanent control measures include strip cropping or maintaining a cover of residue and plant growth on the entire soil surface. Use of stubble, mulch, reduced tillage and other management methods minimize wind erosion.

## **Flooding**

Flooding is a great flow of water a body of moving water; the flowing stream, especially, a body of water, rising, swelling, and overflowing land not usually thus covered; and an inundation. Dams and other flood management facilities do not eliminate floods. They are only part of the solution. Another part is wise flood plain management.

### **CHECK YOUR PROGRESS**

1. Write short notes on a) acid-rain b)Ozone depletion
2. In what ways tourism activities can be linked to global environmental problems? Discuss with suitable examples along with remedial measures
3. Write short notes on a) Natural hazards b) globalization and tourism
4. Describe the most serious man made hazards in India. In what ways they influence /are influenced by the tourism activities.
5. *What consumption patterns and other features of your lifestyle directly add greenhouse gases to the atmosphere? Which, if any, of those things would you be willing to give up slowing projected global warming and reducing other forms of air pollution?*
6. *What consumption patterns and other features of your lifestyle directly and indirectly add ozone - depleting chemicals to the atmosphere? Which, if any, of those would you be willing to give up to slow ozone depletion?*
7. Should the injection of hazardous wastes into deep underground wells be banned? Explain. What would you do with these wastes?

## **UNIT 3:**

### **LESSON - 6**

#### **EFFECTS OF TOURISM ON THE ECO SYSTEM**

For several decades past, volunteer groups and special organizations throughout the world have made every effort to raise the ecological consciousness toward the improvement of human interaction with the world's eco systems. They have made some kind of marginal contribution towards the regeneration of our biosphere. They have not succeeded fully. Since the close of World War II, global tourist activity has flourished generating an economic performance favorable to the investor and happiness to the traveler. But this advantage is offset by the dire consequences and the untold damage done to tourist regions worldwide. These consequences were that natural sites were laid waste and lands and monuments were disfigured. Underground springs and surface streams and waterways were polluted. Native labor force and services were exploited and endemic value systems were subverted.

Those who have planned and developed this kind of leisure travel gave much thought to its positive gains and ignored the negative effects this kind of mass tourism generated. The following are the assumed advantages that the planners of tourism have put forth in their arguments in favors of mass tourism.

1. Tourism contributes to the growth and development of the tourist regions by generating opportunities for economic expansion and serving as a mainspring for cultural refinement, especially in respect of the underdeveloped areas bringing them closer to the modern world.
2. Tourist development is a process of cultural transformation measured by an improvement of the quality of life, rather than economic expansion measured by material welfare.
3. Tourist planners as expert advisors to the local tourist regions, are to translate the desires and goals of the region into complementary actions and programmes and to assess the impact of these transactions on the region so as to assure beneficial results.

4. Tourist industry can be developed with comparatively little capital investment because it makes use of costless and seemingly *inexhaustible natural resources*.

Some of these assumptions have materialized and have bestowed benefits on all concerned. However, many of the assumptions have failed to materialize and turned into liabilities and have brought forth adverse effects. One may doubtless affirm this consumer enterprise of mass tourism has despoiled both natural and social and ecological systems of our cultures.

While we list the ecological costs of mass tourism, we can divide them into four categories each accounting for the bionomic loss from population. They are 1) Environmental degradation, 2) Architectural damage, 3) economic exploitation and 4) cultural subversion.

### **Environmental Impacts of Tourism**

There are positive and negative impacts of tourism activities in the destination areas. The positive impacts occur only where tourism activities are well planned and implemented taking into consideration, the local, environmental, social, economic and cultural costs and benefits of tourism. Therefore the environmental impacts of tourism are assessed in the following pages.

The positive impacts of tourism are the following:

Tourism helps to justify and pay for conservation of important natural areas and wild life in all habitats (*terrestrial and aquatic*) and development of national and regional parks and reserves, because these are major attractions of tourists. This is an especially significant benefit in countries with limited resources for undertaking *environmental conservation*.

Tourism helps to justify and pay for the conservation of *archaeological and historical / heritage sites* as attractions for tourists. Otherwise, many of these sites would simply deteriorate and disappear. From entire historic heritage districts in towns and cities are being conserved and developed for tourism.

Tourism increases local environmental awareness when residents and especially young people observe the interests and commitments of tourists in conservation if tourists are properly

educated. They then begin to realize the importance of conservation in their own surroundings.

However, it is important that an environmental impact assessment (E 1 A) be carried out, for each specific tourism development project (as well as for all types of major projects).

### **Environmental Degradation**

The onrush of mass tourism with holiday overcrowding tendency, has had a devastating effect upon tourist regions, marring the landscape and laying waste the living environment. Tourism locales are found with heaps of littering, trampling of meadows, destruction of grasslands, forest fires, obtrusive tourist routes, congested motor vehicle traffic like random camping, parking and picnicking. Moreover, tourist facilities are spoiled by unsightly mechanized equipments and massive resorts with high rise buildings and hotels erected irreparably altered, haphazard and obstructing natural sites. These defacement have done 'incalculable damage to complex ecosystems. Water sheds are irreparably altered, animal, bird and fish habitats are destroyed, lands and grounds are battered and denuded, air and noise pollution has increased and sewage and refuse disposal have contaminated waterways and water supply.

In areas where land is in short supply, mass tourists development has consumed large plots of agricultural land, threatening all farming. In areas where mass tourism has flourished, deforestation extending unchecked the shrinkage of municipal lands have occurred. High tourist density has devastated to the complex of those biotic factors that act upon an ecological community and determining its form and survival. Because of this excessive tourist development, the natural environment may lose its value forever.

Our total area of land is about 329 million hectares of which 175 million hectares of land require special treatment to restore such land to productive and profitable use. The degradation is caused by water and wind erosion (150 million ha), salinity and-alkalinity (8 million ha) and river action and other factors (7 million ha).

The Indo-Gangetic agriculture often described as a potential bread basket in the world, is being damaged beyond repair as a

result of soil degradation. Some areas are facing problems of water logging and rising water tables because of poorly planned and ill executed irrigation. In other areas, the water table is receding because of over exploitation of ground water. Also the quality of ground water is being affected due to chemical pollution and in coastal areas due to the ingress of sea water. The excessive use of fertilizers and pesticides impose threat to human health to the genetic stocks and reduces the natural soil fertility in the long run. The absence of an integrated land and water use policy for the country is taking a heavy toll on these basic natural assets.

Coral reefs are the most productive marine ecosystems and provides habitat for diverse flora and fauna. These ecosystems are adversely affected by indiscriminate exploitation of coral for production of lime, recreational use and for ornamental trade. Similarly the fragile environs of island ecosystems have been subjected to pressures of various forms including migration of people from the mainland.

Along with these human inflicted wounds on natural ecosystems and life support mechanisms, we are facing serious problems of pollution and unsanitary conditions especially in urban areas. Pollution arising from toxic wastes anon-biodegradable consumer articles is tending to increase.

Lack of opportunities for gainful employment in villages and the ecological stresses is leading to an ever increasing movement of resource poor families to towns. Mega cities are emerging and the urban slums are expanding. Illiteracy within this area 11 percent constitute and child labour are persisting. The substantial urban growth in the past decades has resulted in congestion and squatter settlements with millions of people having no access to the basic needs of civic amenities. The green cover in our urban areas have been largely destroyed and the once beautiful garden cities have become concrete jungles. The man made heritage in India has often been gravely and even irrevocably damaged.

A large number of industries and other development projects have been incorrectly sited, leading on the one hand, to over congestion and over pollution in our urban centers and on the other hand to diversion of population and economic resources from the rural areas. This has also resulted in the pollution of most of our water bodies which are major constituents of our life support

systems. Pollution of water bodies in turn has adversely affected the growth of aquatic fauna and flora which is an environmentally undesirable phenomenon for any ecosystem. The problems of women in villages are compounded in this whole scenario of energy, environmental and developmental imbalance. The incidence of malaria is high in many parts of the country. Safe drinking water is still a luxury in many villages. Liver ailments and gastro-intestinal diseases are common due to unclean drinking water.

### **Architectural Degradation**

Mass tourism has left its damaging impact on structural properties of tourist sites. The tourism developers have undertaken overtly ambitious construction ventures. They have created buildings haphazardly using too much space and also failing to integrate the architectural style with other buildings and the landscape. On occasions, they have modified old structures and distinctive features of earlier construction material and a craftsmanship that no longer exists. They have also damaged the general architectural integrity of tourist regions with the proliferation of advertising signs and giant bill boards announcing special tourist amenities and hawking every conceivable need. Also grave damage is done to historical monuments, cultural artifacts, and natural sites. Scientific discoveries and excavations, places of celebrated events and the fabrication of phantasy lands have made a dramatic impact on the tourist industry attracting very many sightseers to these staged scenes. Mass trampling in and around these areas has severely eroded the buildings and grounds. The deleterious effects of this sort are incalculable especially to Taj Mahal and other popular tourist spots and temple sites in India. Moreover, tourists possessed of the souvenir mentality frequently pilfer artifacts, small collectibles from pre-historic caves, ancient ruins and celebrated shrines gradually stripping these landmarks of their cherished importance. Inscription of names and personal messages as well as the carving or scratching of initials and dates on the walls and the columns of these structures not only disfigures or defaces them, turning them into eyesores. The architectural style and structure of buildings and monuments which have survived through hundreds of years of inviolate conditions are in danger of eclipse after few decades of the advent of mass tourism.

The negative economic effects of mass tourism are

- 1) It makes labor subject to seasonal employment
- 2) It increases the cost of living of those native people whose salaries are not commensurate with the inflationary price level generated by the mass tourism influx.
- 3) It puts the price of land out of reach of the local residents.
- 4) The financial benefits will in fact accrue to the outsider because that one's investment is based on profit priority,
- 5) That outside ownership means less control of the locals economic security because it rests upon the vagaries of the international market. And
- 6) Economic expansion is a vital risk to the local economy because if the venture declines, tourists will go elsewhere and the accelerated economy will collapse.

Hudman points out that the development of tourism as an industry on a massive scale poses new and often serves a grave risk to the environment. It is detrimental to the environment in a long range. Modern mass tourism becomes more and more an environmental menace whose effects often approximate those of extractive industries. Tourist expansion cannot remain unlimited and sooner planners and policy makers in the field of tourism comprehend this, the better. Policy makers must gain control over the ego-drive of the opportunists the man centered aggressive impulses toward manipulation and destruction.

Another way is to place constraints by the state or local government on the tourist industry controlling its expansion by setting environmental limits to developmental programmes and by limiting the number and types of tourists visiting special and /or delicate environments. A restrictive policy to control adverse bionomic effects provides uniform standards for environmental planning and tourist management. These regulative acts would contain such measures as prescribing certain areas as off limits to tourist development, controlling land use and building activities, governing the architectural style of tourist accommodation and supervising tourist planning to prevent over commercialization of sites and over exploitation of resources. But it is seen that the pressure of mass tourism tend to make such controls ineffective. Vested interests operating strictly under the profit-making motive

with little environmental discrimination are averse to any other than economic concerns. Moreover, if the tourism ventures are stopped altogether the local inhabitants also profiting from the tourist trade would be affected. They would view such controls as an encroachment upon their personal freedom and a threat to their economic survival.

A political action with the use of the legal system is called for to control these effects. This can be done through the administration of external constraints. The local or state governments should impose restrictions on the tourist business in their areas. Introduction of laws that would impose demands and penalties and exact compliance as redress of grievances for the disruption of both natural and social eco systems of tourist environs.

Every effort should be made to preserve and conserve the natural and environmental aspects in the area, be it the natural sites, or architectural monuments, or man made attractions etc. The steps taken by the governments and other voluntary associations to reduce the impact of negative aspects of tourism and to enable the tourist industry to financially grow and self supporting are discussed below in the forthcoming pages.

### **Cultural Subversion**

Another negative impact of bionomic import on tourist cultural centers is the subversion of value systems, i.e. the overturn of norms, customs and traditions that causes enormous moral and social problems. The disruption of the eco system virtually abolishes the uniqueness of the culture which has served all along as a main attraction for mass tourism. The coming of an uninhibited party away from home and uninformed or uncaring of local tabus exhibits a moral laxity to the residents insulting their sensibilities and often desecration of their community life. These people profane places of worship by unacceptable dress, photographing and recording ceremonies as they are taking place, trivializing the symbolic and spiritual importance of rituals and vulgarizing objects of veneration. With utter disregard for local laws and customs they pillage national treasures, plunder archaeological sites and conning the people out of their heirlooms and priceless collectibles. They frequently scandalize the local people with other moral improprieties like displaying openly an erotic behavior and going

nude on public beaches. This easy virtue has its subverting effect particularly on the young people who tend to imitate the tourist behavior patterns. There arises a manifestation of a breakdown of the traditional means of socialite control. They display their romantic urges, practice sexual promiscuity and turning the tables, show a readiness to cheat to victimize and even to assault the tourists. There occurs professional begging a common practice of old women and children who dressed in tattered clothes, dirty and with forlorn faces prey upon the sympathies of the tourists passerby.

The traditional local people feel that they have surrendered part of their heritage without receiving comparable benefits. They have become victims of uncontrolled tourist developments and expansion. They lose their ethnic identity in the process to a streamlined, internationally homogenization of society, a form of cultural imperialism. From the sense of social abasement, they get a sense of social alienation which has led to a strong feeling of *resentment and social unrest*. The population becomes polarized between haves and has notes, the high living tourists and the abject locals. Overwhelmed by foreign influence, the artists and artisans and their authentic production have lost their importance. These craftsmen and performers once motivated by what was ceremonial and practical are now propelled by the forces of supply and demand. They have become brokers of art for aesthetic and commercial interests. The authentic traditional culture centers are now turned into fake touristy environments.

As a policy, deliberate use of tourism as a technique of cultural conservation can greatly help in reducing its negative impacts on the culture. At the same time, many societies want to experience some positive change and participate in the benefits of modern development. The approach that they often wish to take is to be culturally selective. They want to keep the best of their traditions that give them a distinctive cultural character, but adopt the best of the changes that will make their lives more comfortable and interesting. Each society must decide on what approach is most suitable for their people when making choices about their tourism development patterns.

Some problems can lead to cultural degradation and lessening of a sense of cultural identity. Deterioration of important archaeological and historic sites can result from overuse by

tourists. There can be excessive commercialization and loss of authenticity of local customs, ceremonies, music, dance, crafts and other cultural patterns when these are inappropriately presented as tourist attractions. There can be a 'demonstration effect'<sup>1</sup> of residents, especially young people, imitating the behavioral patterns and dress of tourists. This is done without understanding the different cultural backgrounds and socio-economic status of the tourists. Also, misunderstandings and conflicts may arise between tourists and residents because of different languages and customs.

### **Socio-Economic impacts of tourism**

Tourism industry is said to be the largest employer in almost every country. The United Nations estimates that through tourism, poor countries earned about \$55 billion in 1988 making it, after oil, the second largest earner of foreign exchange.

Notable among the positive socio-economic impacts are:

- *Improvements in the living standards of people, community facilities and services, (if the economic benefits of tourism are well distributed).*
- *Income generation and contribution to gross national or domestic product (GNP/GDP). This indicates the relative importance of tourism in the total economy.*
- *Foreign exchange earnings from international tourism. This includes calculation of both the gross foreign exchange earnings - the total expenditures of foreign tourists, and net foreign exchange earnings - the foreign exchange remaining in the country after deducting the foreign exchange leakage factor,*
- **Local employment generation** by tourism.
  - Direct employment - the persons who work in tourism enterprises such as  
hotels, restaurant?, tourist shops and tour and travel agencies
  - Indirect employment - jobs generated in the supplying sectors such as agriculture, fisheries and manufacturing
  - Induced employment—additional persons supported by the spending of income made by the direct and indirect employees

- Construction employment—jobs generated in the construction of tourist facilities and infrastructure (this is usually temporary but may be long-lasting in places with continuing development of tourism).

### **The Multiplier Effect**

This refers to stimulus that an external source of income has on an economy. It is the number of rounds of spending that is created in the local economy of the initial tourist spending. This effect, measures the way in which tourist expenditures filter through the economy and generate other economic activities.

### **Contribution to government revenues**

This includes hotel and other types of tourist user taxes, airport departure taxes, and customs duties on imported goods used in tourism, income taxes on tourism enterprises and employees, and property taxes on tourism establishments.

Although not quantifiable, a benefit of tourism is that it helps justify and pay for transportation facilities and services and other infrastructures that are used by the entire community. Besides, tourism can serve as a catalyst for expansion of other economic sectors.

However, if tourism ignores the local communities and fails to safeguard their livelihood security, there can be several negative impacts. Notable among these are:

- Dissolution of social cohesion due to social conflicts leading to neocolonialism
- Alienation/marginalisation of local communities - loss of livelihoods, threatening food and energy security of the local communities
- Increase in crimes, drug abuse, prostitution and immorality
- Overcrowding and its psychosocial impacts.

Overcrowding by tourists and loss of convenience for residents leads to their resentment and sense of hostility toward tourism. If there are too many tourists in an area - which can happen particularly at peak season periods -attraction and amenity features, and restaurant, shopping and transportation facilities can

become so overcrowded by tourists that residents cannot easily use them. If residents are completely prohibited from access to amenity features such as hotels and beaches, they may become even more resentful. Large numbers of tourists can be especially disruptive in small rural communities. Resentment can particularly arise if residents perceive that they are not receiving adequate economic benefits from tourism, and that tourism development is controlled by outside interests. Social problems of drug abuse, alcoholism, crime and prostitution may be worsened by tourism. The research conducted on these problems indicates that tourism is seldom their basic cause, but it may provide the opportunity to expand them.

### **Benefits from Eco tourism financial contributions**

#### **Direct Financial Contributions**

Tourism can contribute directly to conservation of sensitive areas and habitats. Revenue from tourist spot's entrance fees and similar sources can be allocated specifically to pay for the protection and management of environmentally sensitive areas. Special fees for Dark operations or conservation activities can be collected from tourists or tour operators.

#### **Contributions to Government Revenues**

Some governments collect money in more far-reaching and indirect ways that are not linked to specific spots or conservation areas. 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 programmes and activities such as tourist spot's ranger salaries and maintenance of the tourist spots.

#### **Improved environmental management and Planning**

Sound environmental management of tourism facilities and especially hotels can increase the benefits of 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 of tourism development,

damaging and expensive mistakes can be prevented avoiding the gradual deterioration of environmental assets significant to tourism.

Cleaner production techniques can be of important tools for planning and operating tourism facilities in a way that minimizes their environmental impacts. Green building, using energy efficient and non-polluting construction materials, sewage systems and energy sources is an increasingly important way for the tourism to decrease its impact on the environment. As 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**

Tourism has the potential to increase the 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 heighten awareness of the value of nature and lead to environmentally conscious behavior and activities to preserve the environment. School going children should be routinely taken to eco tourist centers to learn about the intricacies of preserving and conserving the natural tourist spots.

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 and for services including tourism services that are provided in a way to minimize 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 for environmental protection, conservation and restoration of biological diversity and sustainable use of resources. Because of their attractiveness, pristine sites and natural areas are identified as valuable and the

need to keep the attraction alive can lead to creation of national and wild life parks.

Tourism has had a positive effect on wildlife preservation and protection efforts notably in Africa, South America, Asia, Australia and South Pacific. Numerous animal and plant species have already become extinct or may become extinct soon. Many countries, therefore, established wildlife reserves and enacted strict laws protecting the animals that draw nature-loving tourists. As a result of these measures, several endangered species have begun to thrive again. For example, in the Great Lake region in Africa, mountain gorillas, one of the world's most endangered great apes bring more revenue to the country from ape related tourism. Despite civil war in the country for the past 10 years, all contesting parties cooperate in protecting the apes and their habitats. In India, tiger population has been reduced due to indiscriminate poaching. The Government is taking steps to save the tigers.

### **Alternative Employment**

Tourism can provide an alternative to development scenarios that may have greater environmental impacts. In a Guatemalen village of San Andres those people employed in a language school were formerly engaged in illegal timber extraction, hunting and slash and burn agriculture avocations. Those families which were now given opportunities to work in a school have significantly reduced illegal hunting practices and the number of slash and burn agricultural plots, furthermore, community, managed private reserves have been established and social pressure against hunting has increased. Tourism has increased the awareness of the conservation and preservation of natural tourism locales and they have provided a major source of genuine alternative to timber exploitation and poaching and trade of wild life.

### **Regulatory measures**

Regulatory measures help offset negative impacts. 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 a limit can reduce the negative impacts on resources. Limits should be established after an in-depth analysis of the maximum sustainable visitor capacity. For example, in an island there are regulations about the number of ships that can be allowed to cruise. There are also

regulations that only certain designated islands can be visited ensuring visitors have little impact on the sensitive environment and animal habitats.

### **Tourism's Contribution to Socio-cultural Conservation**

Tourism can contribute to positive developments, not just negative impacts. It has the potential to promote social development through employment creation, income distribution and poverty alleviation.

**Other positive impacts of tourism are:**

#### **Tourism as a force for peace**

Traveling brings people into contact with each other and it has an educational element. It can foster understanding between peoples and cultures and provide cultural exchange between hosts and guests. Because of this, the chances increase for people to develop mutual sympathy and understanding and to reduce their prejudices. In the end, sympathy and understanding can lead to a decrease of tension in the world and thus contribute to peace.

Tourism can add to the vitality of the communities in many ways. Events and festivals of which local residents have been the primary participants and spectators are 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 *earning prospects, through tourism related professional training and development of business and organizational skills.*

#### **Facilities developed for tourism can benefit residents**

Tourism supports the creation of community facilities and *services that otherwise might not have been developed.* It can bring higher living standards to a destination. Benefits can include up gradation of infrastructure, health, 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 tradition**

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. When visitors continually pour in to see the traditional art and culture of the places, it gives the local people a kind of confidence and pride in their art. This realization removed any possibility in the peoples mind that their art is in no way inferior to the art of advanced nations and plays an important role in conserving and developing the art in general.

### **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 interests in its conservation. More broadly, the involvement of local communities in tourism development and operations appears to be an important condition for the conservation and sustainable use of bio-diversity.

These are some of the consequences of tourism that can arise only when tourism is practiced and developed in a sustainable and appropriate way. Involving the local population is essential. A community involved in planning and implementation of tourism has a more positive attitude, is more supportive and has a better chance to make profit from tourism than a population passively ruled or over run by tourism. One of the core elements of sustainable tourism development is community development, which are a process and a capacity to make decisions that consider the long term economy, ecology and equity of all communities.

Tourism helps in a big way towards economic goals of a country. They relate to foreign exchange earnings, contributions to government revenues and generation of employment and business opportunities.

### **Foreign Exchange Earnings**

Tourism expenditures and the export and import related goods and services generate income to the host country and can stimulate the investment necessary to finance growth in other economic sectors. Some countries seek to accelerate this growth by requiring visitors to bring in certain amount of foreign currency for each day of their stay and do not allow them to take it out of the country again at the end of the trip. Tourism is one of the top five export categories for as many as 83 per cent of the countries and is

a main source of foreign exchange earnings for at least 38 per cent of the countries in the world.

Government revenues from the tourism sector can be categorized as direct and indirect contribution. Direct contributions are generated by taxes on incomes from tourism employment and tourism businesses and by direct levies on tourists such as departure taxes. Indirect contributions are those originated from taxes and duties levied on goods and services supplied to tourists. The world's Travel and Tourism Council estimates that travel and tourism's direct, indirect and personal tax contributions worldwide was over US \$ 800 billion in 1998 a figure it expects to double by 2010.

### **Employment Generation**

The rapid expansion of international tourism has led to significant employment creation. Tourism can generate jobs directly through hotels, restaurants, nightclubs, taxis and souvenir sales and indirectly through the supply of goods and services needed by tourism related businesses. According to WTO, tourism supports some 7 per cent of the world's working people.

### **Simulation of infrastructure investment**

Tourism can induce the local government to make infrastructure improvements such as better water and sewage systems, roads, electricity, telephone and public transport networks all of which can improve the quality of life for residents as well as to facilitate tourism.

### **Contribution to local economies**

Tourism can be a significant even essential part of the local economy. As the environment is a basic component of the tourism industry's assets, tourism revenues are often used to measure the economic value of protected assets. The importance of tourism to local economies can also, be illustrated by the impacts when it is disrupted. Floods and other natural disasters cause locally severe economic losses to the areas around the tourist's spots. In these areas personal income of the localities will be reduced heavily if the tourism activities are disrupted by natural calamities. This loss is besides the huge loss which the local administration will have to incur in the form of loss of sales tax revenue and other revenues

from the tourists. There are other local revenues that cannot be easily quantified as all tourist expenditures are formally registered in the macro economic statistics. Money is earned from tourism through informal employment such as street vendors, informal guides, rickshaw drivers etc. The positive side of the informal unreported employment is that the money is returned to the local economy and has a greater multiplier effect as it is spent over and over again. The World Travel and Tourism Council estimate that tourism generates an indirect contribution equal to 100 per cent of direct tourist expenditures.

### **CHECK YOUR PROGRESS**

1. Explain the environmental impacts on tourism.
2. Discuss the cultural subversions that go on as a result of mass tourism
3. Describe the economic benefits of mass tourism
4. Bring out the socio-economic impact of tourism
5. Account for the benefits from ecotourism. er natural disasters cause locally severe

## LESSON-7

### ECOTOURISM IN INDIA

The geographical diversity in India has presented a wealth of ecosystems which are well protected and preserved. These ecosystems have become the main resource base for the development of eco tourism in the country. They are: 1) Biosphere Reserves, 2) Mangroves, 3) Coral Reefs, 4) Deserts, 5) Mountains and Forests, 6) Flora and Fauna, 7) Seas, Lakes and Rivers and 8) Caves.

#### **Biosphere Reserves**

Biosphere reserves are multi-purpose protected areas for preservation of the genetic diversity and integrity of plants, animals and micro-organisms in representative ecosystems. There are seven such reserves at present. They are 1) Nilgiri, 2) Nanda Devi, 3) Nokrek, 4) Great Nicobar, 5) Gulf of Mannar, 6) Manas and 7) Sunderbans.

#### **Mangroves**

Mangroves are very specialized forest ecosystems of tropical and sub-tropical regions bordering sheltered seacoasts and estuaries. Major Mangrove areas in India are:

1) Northern Andaman and Nicobar Islands, 2) Sunderbans (West Bengal), 3) Bhitarkanika and Mahanadi Delta (Orissa), 4) Coringa, Godavari Delta and Krishna Estuary (Andhra Pradesh), 5) Pichavaram and Point Colimere (Tamilnadu), 6) Goa 7) Gulf of Kutch, 8) Goondapur (Karnataka), 9) Achra / Ratnagiri (Maharashtra) and 10) Vembanad (Kerala).

#### **Coral Reefs**

There are four major coral reefs identified in the country so far. They are:

1) Gulf of Mannar, 2) Andaman and Nicobar Islands, 3) Lakshadweep Islands and

2) Gulf of Kutch

## **Deserts**

The Great Thar Desert and the little deserts in the North Western Regions of the country are distinct ecosystems which have fascinated tourists from all over the world.

## **Mountains and Forests**

The great Himalayas and other mountain ranges in the country along with the snow clad slopes, forests and rivers have also become great attractions for ecotourists. The country has an area of about 752.3 lakh hectares notified as forest land and of this about 406.1 lakh hectares are classified as Reserve Forests and 215.1 lakh hectares are protected forests.

## **Flora and Fauna**

India is floristically rich. The Country has about 45,000 species of plants. The country has also a great variety of fauna, numbering a little over 65,000 species including 1,228 of birds, 428 of reptiles, 372 of mammals, 204 of amphibians and 2546 of fish. To protect and preserve these genetic beings India has established a number of National Parks and 421 wildlife sanctuaries in different parts of the country. Some popular places are Kaziranga and Manas in Assam, Jim Corbet in Uttar-Pradesh, Keoladeco in Ghana, Ranthambore and Sariska in Rajasthan, Kanha and Bandhavgarh in Madhya Pradesh; Bandipur in Karnataka and Simlipal in Orissa.

## **Water Resources**

The Arabian Sea, The Indian Ocean and the Bay of Bengal brace the sides of the Indian sub-continent except for the northern boundary. The land mass of India is crossed by several rivers and dotted by lakes at many places. These water bodies provide attractive opportunities for water sports.

## **Policy and Planning**

The national policy on tourism stipulates that "tourism should become a unifying force nationally and internationally, fostering better understanding through travel. Tourism should help to

preserve, retain and enrich our world view and life-style, our cultural expressions and heritage in all its manifestations. The prosperity that tourism brings should strengthen and cause accretions, rather than damage, to our social and cultural values and depletion of our natural resources.

The policy objectives in the context of ecotourism would involve a selective approach, scientific planning, effective control and continuous monitoring. The developmental process itself should meet the following cardinal principles.

(i) It should involve the local community and lead to the overall economic development of the area.

(ii) It should identify the likely conflicts between resource use for tourism and the livelihood of local inhabitants and attempt to minimize such conflicts.

(iii) The type and scale of tourism development should be compatible with the environment and socio-cultural characteristics of the local community and

(iv) it should be planned as a part of the overall area development strategy guided by an integrated land use plan and associated with commensurate expansion of public services.

The Biospheres, mangroves, coral reefs, deserts and mountains which form the resources of ecotourism are fragile ecosystems. Therefore, decisions for the development of tourism in such areas have to be based on a thorough understanding of local resources, social and economic factors and other characteristics.

The objectives of tourism, development in any specified area as well as the intended beneficiaries dependency and scale of development have to be decided on the basis of these factors and discussions and negotiations with the most directly concerned.

The development of the physical infrastructure of tourism should be preceded by the preparation of an inventory of resources and a zoning/management plan to ensure preservation and public use of valuable natural sites.

The tourism management plan should also establish standards for forest development, covering among others the style

and locations of structures, treatment of sewage and control of litter, preservation of open spaces and public use of fragile areas. It should further lay down procedures to ensure that sewage is not directed to the beach or the ground water and solid waste is systematically collected and disposed of suitably. Adequate precautionary measures should also be taken to avoid noise pollution. It should also specify methods and material for construction activities and minimize any possible adverse impact on local environment.

The key players in the ecotourism business are the Government both central and at state levels, the local authorities, the developers and the operators, the visitors and the local community. Each one of them has to be sensitive to the local environment and local traditions and follow a set of guidelines for the successful development of tourism. In addition to non-Governmental organizations and scientific research institutions also have to play a key role in the development of ecotourism.

#### **Eco Tourism Policy of Tamilnadu**

25.4 percent to the total tourists visiting Tamilnadu visited the eco-friendly tourists spots in the State during 1997. Among the 9 biosphere reserves in India two are located in Tamilnadu, one in Nilgiris and another in the Gulf of Mannar. The State Government has declared the coast area between Muttakadu and Pondicherry as special Tourism Area. A number of eco-friendly tourism activities like golf course, beaching resorts, private sector promoters in this area propose adventure sports. To encourage the eco-friendly tourism potential (without affecting it) in the Kurusadai Group of Islands, works have been taken up to strengthen the existing infrastructure. Eco-friendly adventure tourism activities are proposed at Kolavoi lake, Chengalpattu, Pulicot Lake near Chennai and Pitchavaram near Chidambaram.

#### **Coastal Regulation Zone**

The Government of India, has notified the coastal area under Coastal Regulation Zone and divided it into 4 zones viz., CRZ I, CRZ II, CRZ III and CRZ IV. Coastal area in Tamilnadu falls under the first three zones. About 1000 kms coast line in Tamilnadu with abundant tourism potential helps to generate more economic activities in India, especially in this State. There is a stipulations that no; industrial activity or hotel activity can be undertaken on the

seaward side of the East Coast Road has negated the concept of Beach Tourism. The State Government has requested the Union Ministry of Environment and Forest to; remove the said conditions and permit tourism oriented activities subject coastal zone regulations.

The following is the extract from the Report of the National Committee on Tourism 1988, Government of India, regarding the solution for betterment of ecological balance in the country. The summary of extract of recommendations and suggestions reads as under.

India has a stock of natural and man-made resources or tourism and recreation viz., unspoilt country-sides, coastlines, lakes and rivers, mountain regions and forests, wildlife areas and historical cities and monuments. Modern tourism demands vast infrastructure and development takes many spatial forms.

In the process, the major tourist sites are inevitably transformed. At best their natural attraction or primeval innocence is impaired and at worst irreversible environmental damage is caused by a rush to build tourist facilities on the most attractive sites.

The environmental damage largely stems from the fact that the type and scale of tourist development often exceeds the carrying capacity of the natural and human made resources available. This is because:

1. No effort is made to assess the carrying capacity of the tourist area i.e., the extent of the tourist activity that the area can absorb without degradation of its ecological or aesthetic value.
2. There is no effort to assess the adverse ecological and social Impact of the tourism in an area and thus no knowledge on how to avoid or minimize this trend.
3. Tourism is promoted with little or no regard for the ecological and social characteristics of the area. Short-term gains become the over-riding factor at the long-term cost of the local environment and the local people.

4. Tourists are usually ignorant or uncaring about the ecological and social significance of the areas they are visiting and the fragile nature of these areas.
5. The Archaeological Survey of India or the Wild Life Wing in the National Parks and sanctuaries and natural ecosystems are not equipped to deal with the hordes of tourists who descend on them.
6. There is little attempt to integrate tourism development into the overall development plans of the area or else minimize the damage already being caused by such activities.

Tourism has a positive side and can be used as a force for preservation of ecology, and for better maintenance of our monuments and places of interest for tourism. To enable this to happen, the various causes of ecologically destructive tourism mentioned above, have to be solved at the earliest.

The first essential step toward harmonizing tourist development with local ecological conditions is to assess the carrying capacity of each area in which tourism is sought to be promoted. It is also necessary to assess the anticipated environmental impact of tourist activity in an area. It is suggested that assessment technique based on use of systems analysis be evolved.

The Report of the National Committee on Tourism further states that tourism plans will have to be made for each area, which should include the following:

1. Closing of certain areas completely to tourism if it is established that they are too fragile or important to be exposed to such activity (e.g. Andaman and Nicobar Islands)
2. Creating specific tourism zones within areas, where the majority of tourist activity can be concentrated (like national parks where the tourist zone diverts pressure from the ecologically more important core zones)
3. Rotating areas open to tourists so that an area opened for sometime may be closed and allowed to recuperate while another is opened.
4. Allowing only a limited number of tourists at any given time.

5. Allowing only certain kind tourism at one time (like trekking)
6. Developing tourist facilities which are in harmony with local ecosystems. Alternative to large scale road construction in the hills like bridle paths, cycle tracks, ropeways etc should be erected.

Tourist plans for the area must be integrated into the overall development plans for the area. This would ensure that the demands on the local resources are assessed together and the objectives of tourism do not conflict with those of socio-economic development in the area.

Non-Governmental organizations, especially ecological and adventure groups have an important role to play in this regard and their services should be availed of.

The Report recommends that a national policy be evolved to implement these recommendations and are backed by a comprehensive legislation.

#### **The India Eco Development Project (IEP)**

The Sixth Plan document emphasized the need for balanced growth so that the development activities could proceed hand in hand with ecological preservation. Among the various schemes operated by the Department of Environment during the Seventh Five Year Plan, Integrated Action Oriented Research, Development and Extension Programme was one such activity, and was implemented in three major areas in the country, namely Western Ghats is also necessary to assess the anticipated Eastern Ghats and Himalayan region. *Incidentally, these are also the areas that receive a larger number of domestic as well as international tourists.*

The India Eco Development Project (IEP), is supported from the Global Environmental Facility (GEF) and International Development Aid (IDA), The World Bank is engaged in a major initiative to promote the conservation of biological diversity through the implementation of the eco development strategies around select Protected Areas (PAs) in India. However, such well-meaning programmes in India have not succeeded fully due to several inherent weaknesses in the programme such as:

- Conceptual and practical factors prevent genuine participation on behalf of local communities, particularly of poor and marginalized people.
- Participatory rural appraisal (PRA) and rapid rural appraisal (RRA) methods of data collection are widely used but often not properly understood or properly applied. Poor and marginalized people and especially women are often inadequately represented in village eco development councils (VECs) or, if represented, are unable to influence the decision-making process. The State Government orders regarding membership in the VECs usually allow one household representative, usually the males.
- The approach has neglected to push for changes in land tenure legislation and agrarian reforms, which could provide incentive to invest in land improvement and conservation. Under the present tenurial arrangements, it has been difficult to involve local people in conservation, since the earlier exclusionary approach failed to develop interest in conservation among local communities.
- Considerable bottlenecks exist at -all levels in the funding mechanism. In most cases, PA management does not have financial, managerial and administrative autonomy, and mechanisms for plan approval, procurement of funds, expenditures and controls are unclear. Staff lack the technical skills needed to deal with large budgets and new roles.
- While the list of eco development activities can be quite comprehensive, it does not amount to a strategy. Conservation - development linkages are weak and there is not a framework for interdepartmental co-operation. Moreover, eco development has not been able to control land use on the fringes of .the PAs, for example the proliferation of tourist resorts on the periphery of Periyar Tiger Reserve and the mushrooming of cement factories on the fringes of the Gir Lion Sanctuary.
- Neither the capacity of staff nor of local people has sufficiently been invested in, to cope with extra demands.

- There is a lack of understanding of the concept among forest department officials (particularly field staff) and among local people, who may fear the loss of their rights.
- The Forest Department, hierarchical and almost totally non-participatory in its decision-making processes, has difficulty practicing what it has only recently begun to preach. Participation is needed to get plans approved but, in practice, it is usually limited to informal discussions.
- Eco development has expanded the duties of forestry staff, but staff capacities have remained unchanged. In most cases, training programmes are conducted too late
- Although the eco development programme envisages interdepartmental cooperation, the legal, policy and administrative frameworks to achieve this remain hazy.

These drawbacks may be overcome/ reduced by:

- Empowerment of local communities and field staff through training and capacity building.
- A national coordinated approach to natural resource conservation - it may be unreasonable to expect communities in and around forests to live-austerely while other members of the society waste resources.
- The restoration of local-level institutional arrangements that were developed to give rise to sustainable resource use patterns.
- The recognition that different dimensions of poverty; such as seasonal deprivation and powerlessness, are related to environmental change in specific ways and require different policy measures,
- Equal opportunities for all stake holders to control and manage resources and receive their benefits.

### **JOINT FOREST MANAGEMENT AND ECODEVELOPMENT**

In recent years, there has been a shift towards participatory approaches in forest management and biodiversity conservation. The Indian Forest Policy of 1988 and the subsequent Government resolution on participatory forest management emphasize the need

for people's participation in natural forest management. The policy document asserts that local communities should be motivated to identify themselves with the development and protection of the forests from which they derive benefits. Thus, the policy envisages a process of joint management of forests by the State Governments (which have nominal responsibility) and the local people, which would share both the responsibility for managing the resource and the benefits that accrue from this management.

Since 1991, the Government of India has committed funds, particularly in the field of PA management, for eco development (also called integrated conservation and development). All the ecodevelopment activities are administered by village ecodevelopment committees (VECs) or forest protection committees (FPCs). Ecodevelopment integrates environmental and forestry activities with those of other development agencies. Since 1993, land improvements, implementation of land reforms, land consolidation and soil conservation, minor irrigation, water management and watershed development, animal husbandry, fisheries and non-wood forest products (NWFPs) have come under the jurisdiction of the panchayat, the village-level administrative unit.

Both JFM and eco development emphasize people's participation in natural resource management through empowerment. However, while under JFM villagers are able to obtain a share of forest produce, wildlife laws prohibit the extraction of forest produce for human use from national parks and wildlife sanctuaries. The scope for linking eco development with JFM is hence limited, as there is little opportunity for using buffer zones, where these are wildlife sanctuaries, to meet the resource requirements of the local people.

Besides adopting the solutions suggested above for improving eco development strategies, the following additional guidelines may be followed for JFM:

- Flexibility in allocation of time and funding is needed at the planning stage. Intensive communication efforts using a variety of media are necessary to create conservation awareness in the villages, to transfer technologies, to build confidence in the participants and to create a spirit of collaboration among PA personnel and village people.

- To secure effective and active participation of communities, programmes must restore the local institutions concerned. In addition, institutional linkages with mainstream development programmes need to be formalized. For instance, Community based Eco - tourism may be integrated with JFM.

**CHECK YOUR PROGRESS**

1. Describe the wealth of the eco system of India.
2. Discuss the policy and planning undertaken by the Government to preserve the eco system.
3. Account for the eco tourism policy of Tamilnadu Government.
4. Give a brief account of the activities of the Joint Forest Management and Eco development.

## **UNIT 4:**

### **LESSON -8**

#### **NATIONAL POLICY ON ECOLOGY AND ENVIRONMENT**

Key initiatives of environmental policy date from the late 1960s and early 1970s when public demonstrations and riots were on the agenda in industrialized countries, and when environmental pollution had become a major public health concern. It is because of the new phenomenon of acid rain in North Europe. These years of public unrest and distrust witnessed a slow erosion in 'business as usual' and the rising call for 'the conservation of nature' soon led to the chaotic birth of the first green parties in Europe and, at the global level, led to the UN Conference on the Human Environment (so called Stockholm Conference) of 1972 - the beginning of the active period of international environmental policy with new insights into the relationship between human society and the earth's natural capital. The Stockholm Conference set the scene for novel international activities at the global and regional level and also influenced legal and institutional development. In 1973, the United Nations Environmental Programme (UNEP) was created as the central environmental focal point in the United Nations, and other international organizations slowly followed suit and presented environmental protection concepts of their own. The Food and Agriculture Organization of the United States (FAO), World Health Organization (WHO), World Meteorological Organization (WMO), United Nations Educational, Scientific and Cultural Organization (UNESCO), and the World Bank are the examples.

While the substance of environmental policy formulation is largely dominated by science, political essence is often characterized by the delay between cause and effect.

#### **The Indian Scenario**

Our policy makers have paid only inadequate attention to environmental policy making and implementation before 1960s. Between 1960 and 1970, there was limited attention on the environmental issues but there was no integrated approach. This situation changed from 1970 onwards due to the emergence of "environmentalism" as discussed above. Before 1972, various environmental issues/problems were dealt separately by different Ministries of the Central Government with little, if any coordination

between them, as they were functioning in isolation. Realizing the urgent need for coordination, the National Committee on Environmental Planning and Coordination (NCEPC) 'was constituted by the Department of Science and Technology (DST), Government of India, in 1972. It was renamed as National Committee on Environmental Planning (NCEP) in 1981.

Countries in economic transition such as India with an expanding population and growing affluence rely more on fossil fuels (coal oil and natural gas) for their faster development paths. This causes severe environmental problems.' Energy/environment problems in India like any other developing countries, arise out of five major factors:

- Higher population growth rates in resource rich areas
- Increase, in per-capita consumption of energy and other natural resources as the economy grows (through surplus income)
- Unequal distribution/ownership/accessibility of natural resources
- « The resultant failure to control over exploitation of natural resources (rate of harvesting higher than rate of renewal) and
- Failure to adopt technologies that are energy efficient and environmental friendly due to inadequate policy support

All these factors are primarily caused by our Inadequate/inappropriate policy mechanisms on energy-environment nexus issues facing our society. Energy and environmental issues/problems are both sides of the same coin; environmental degradation to a considerable extent in India, like any other third world country is due to the fragmented, short-sighted energy environmental policies/ planning e.g. failing to provide adequate support for cost effective, environmental friendly and appropriate energy technologies in terms of funding for research, education, extension and adoption; similarly, many of our energy problems can be ultimately traced to lop sided, ad-hoc environmental policies. The following are some of the notable examples.

- Refusal to part with whatever little information is available in the form of committee reports/documents/data-bases on development projects

- Lack of transparency in decision making at all levels for political/personal gains e.g. current centralized development planning and implementation for new development projects
  - Mixed priorities, sector conflicts, varying targets (often made on ad-hoc basis rather than on locally felt community needs)
  - Cumbersome procedures, discretionary powers, redundancy/red-tapism and corruption at all levels in several Government departments.
- » Lack of central/regional institutions/mechanisms to deal with the inter-disciplinary/ transboundary issues like energy-environment interactions, cross-sectoral issues (e.g. interaction of tourism with the other sectors), interstate disputes in sharing/use of transboundary resources (e.g. Kaveri River conflict) and lack of trained manpower to deal with such issues at all levels and to operate and maintain appropriate energy/environment technologies at local levels
- Failure of the "blue-print" or "ready-made solutions" for local energy/environmental problems since the problems as well as solutions are site specific depending upon local situations,
  - Lack of access/familiarity to/with appropriate technologies for energy/environmental management due to social, economic and political factors like poverty, lack of knowledge/ purchasing power and political will to support and popularize such technologies
  - Promoting policies to encourage wasteful resource use or offer little/no incentives for rational/prudent sustainable/ exploitation e.g. free power supply to agricultural pump sets
  - Serious problems associated with the environmental legislation like outdated, un-realistic, unenforceable and inconsistent nature of most of the laws with many loop-holes; delay in litigation
  - Political / interference in decision making in the current politically unstable scenario with largely corrupt politicians / bureaucrats under the clutches of the industrial giants, multinationals and other elites

Realizing the seriousness of these drawbacks, Ministry of Environment, Forests and Wildlife (MOEN& F) have recently evolved the following policy framework.

**Overall focus of decentralization of EC process to make it more effective and efficient:**

All over the world, there is a gradual shift of paradigm in terms of implementation of environmental management plans in line with the "Think Global, Act Local" concept. Post Rio, the host of Global conventions, agreements and norms (collectively called the Rio Agreements) that have been formulated all have a prime focus on implementation at the local level -which is where real environmental action takes place - targeting the man-on-the-street.

Direct local democracy in the form of definitive role of the village panchayat /Ward council as an action point to find solution to local problems has, been mandated through the 73<sup>rd</sup> and 74<sup>th</sup> amendments to the Indian Constitution. In light of these policy imperatives, the new system for EC emphasises, on a stronger role for state government bodies and local governments/village institutions in the EC process. This is also in tune with the thinking of the State Governments who are keen to play a an increasingly more significant role in environmental decision making to grant environmental clearance to developmental activities or projects to come up at any location within their jurisdiction.

The new system also takes into consideration the fact that the State Governments are better equipped to carry out project level enforcement in terms of reach, legal backing and administrative measures at their disposal. For example, the State Governments have control over water and electricity supply and are empowered to take actions against defaulters. The Central Government is envisaged to play a more crucial role in formulating and crystallising the strategies, policies and programmes for the Government. The State Governments would however be under the close surveillance of the Central Government to ensure overall environmental performance.

### **Focused environment assessment for effective resource utilization**

The current system has no requirements for formal scoping as a result of which the MoEF has come across a number of projects with poor quality EIA reports not addressing the vital issues of concern. As a result, MoEF often had to recommend a revised study, which inevitably causes delay in project implementation and also leads to a national economic loss.

To address all these issues, the proposed system would have a formal scoping exercise which would set appropriate boundaries of the assessment, incorporating relevant project aspects and site sensitivity concerns of the Government into the EIA study. It is also proposed to incorporate public concerns in EIA study at the beginning itself by involving people at scoping stage.

### **Increased public involvement in environmental decision making**

The current EIA system has in its fold ways of espousing the views of the public through a public hearing. However, critical review of the existing practice and the past performance of such hearings have revealed that such a one-off dialogue is not serving the desired purpose. Consequently, there is a growing consensus amongst policy institutions and government agencies that timely and broad-based stakeholder involvement should form a vital ingredient of an effective EIA. If carried out properly, it can play a crucial role in building awareness about the project and its associated environmental and social impacts and gaining agreement on management and technical approaches in order to maximize benefits and reduce negative consequences. Even private sector players in India are gradually coming to realize that effective public consultation by actively involving affected stakeholders enhances the long-term viability of a project.

### **Environmental resources management - a framework for EC**

Therefore, the new system for EC proposes adequate public consultation and disclosure mechanisms throughout the various EC stages i.e. scoping, EIA study phase and post project monitoring. At the same time, it provides for involving a broad range of stakeholders in the process - starting from the Central or State Ministries, regulating bodies to district administrative officials, gram

panchayats, and most importantly all individual stakeholders who are directly or indirectly affected by the project proposal. It is felt that such wide-ranging participation would promote transparency and build a sense of ownership of the project in the local community. At the end of the EC process, this should lead to lesser dissent and better understanding on what the project can deliver to the society in comparison to the impacts, it causes.

#### **Reorganization of appraisal system to enhance decision making**

Although the current system of appraisal of projects for EC is quite comprehensive but has certain inherent limitations and therefore has considerable scope for improvement. All expert members of the appraisal committee who sometimes receive the EIA report at the eleventh hour are required to review the complete report, which is often difficult. Moreover, the system does not have scope for a structured report to evaluate the adequacy of impacts considered with respect to the project, its environmental settings and the corresponding mitigation measures proposed.

#### **Improved compliance to EC conditions through reorganised post project monitoring**

Compliance to EC conditions and regulations in general has been the major concern of the environmental regulatory authorities since the last three decades. However, the monitoring agencies (Regional Offices of MoEF) do not have the scope to review the EMPs even if it is not yielding the desired results or when the project lifecycle stage has changed.

#### **Investing in capacity building of human resources linked with EC**

Capacity building in context of EC would mean the long term, voluntary process of increasing the ability of our country to identify problems in the EIA institutional set-up and to maximize its opportunities in the long term. It would involve the mobilization of human, institutional and other resources and their subsequent strengthening and development with the ultimate objective of making the EC system efficient and effective.

The Central and State public sector stakeholders including Ministry of Environment and Forests, Central and State Pollution Control Boards, State Department of Environments, District

administrative authorities, local bodies and other institutions who would be expected to play a role in the modified EC process need to go through a well planned and structured approach of capacity building and training at various functional levels.

### **Institutional strengthening and capacity building**

The existing EC process involves both Central and State level institutions. At Central level, the Impact Assessment (IA) Division within MoEF retains the wholesome power to take decisions and direct other institutions in the entire process. There are two more central level institutions viz. Central Pollution Control Board and Regional Offices of MoEF.

Among the State level Institutions, the State Department of Environment (SDoE) [which has been formed as independent Department in some States or working under some other existing departments] and the State Pollution Control Board have a role to play in the existing EC process. The EIA Notification, 1994, placed IA Division of MoEF as an apex, decision making body related to Environmental Clearances for such category of projects which were considered to be of national and regional importance in terms of pollution potential and significant adverse impact on environment. The existing EC process broadly consist of the sub-processes viz. Screening, Public Hearing, Appraisal and Post project monitoring.

The IA Division has entrusted the responsibility of conducting Public hearing on the concerned State Pollution Control Boards as per the procedure laid out in Schedule IV of EIA Notification, 1994. IA Division plays no role in the actual conduct of Public hearing process. The role of SPCBs is brought in quite abruptly into the national EC process. The responsibility of conducting Public hearing only with no major say in the EC decision making process has been resented by many of the SPCBs.

As per the Notification, the IA Division has constituted a multi-disciplinary Committee of Experts (Environmental Appraisal Committees) for environmental appraisal of development projects. Expert Committees have been constituted for the following sectors:

1. Mining Projects
2. Industrial Projects
3. Thermal Power Projects
4. River Valley, Multipurpose, Irrigation and H.E. Projects.
5. Infrastructure Developments and Miscellaneous Projects.
6. Nuclear Power Projects

### **Coastal Area Management**

Coastal States/UTs are required to prepare Coastal Zone Management Plans (CZMPs) as per the provisions of the Coastal Regulation Zone (CRZ) Notification 1991, identifying and categorizing the coastal areas for different activities and submit it to the Ministry for approval.

The Coastal Regulation Zone (CRZ) came into existence on February 19, 1991, with the gazetting of the notification by the Union Ministry of Environment and Forests (MoEF) under Sec. 3(1) and Sec. 3(2)(v) of the Environment Protection Act, 1986, and Rule 5(3)(d) of the Environment Protection Rules, 1986. Through the Notification the Central Government declared the coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters, which are influenced by tidal action (in the land ward side), up to 500m from the high tide line (HTL) and the land between the low tide line (LTL) and HTL as CRZ.

In the case of rivers, creeks and backwaters, the Notification stated that the CRZ could be modified on a case by case basis, on the basis of reasons to be recorded during the preparation of the coastal zone management plan (CZMP). However, the width of the CRZ from each bank could not be less than 100 m., or the width of the water body, whichever was less.

#### **Activities Prohibited in the CRZ:**

- Setting up of new industries and expansion of existing ones, except those directly related to waterfront or requiring foreshore facilities.
- Manufacture, handling, storage or disposal of hazardous substances.

- Setting up and expansion of fish processing units including warehousing (excluding hatchery and natural fish drying in permitted areas).
- Discharge of untreated wastes and effluents from industries, cities, towns or other human settlements. The existing practices would have to be phased out by the concerned authorities within three years.
- Dumping of ash or any waste from thermal power plants.
- Land reclamation, bonding or disturbing the natural course of sea water with similar obstructions. Exceptions are made for activities required for the control of coastal erosion, the maintenance of water ways to ports; clearing sand bars; and for the construction of regulators, storm water drains and structures for the prevention of salinity ingress.
- Mining of sand, rocks and other substrata materials, except those raw minerals not available outside the CRZ areas.

**Construction activity in ecologically sensitive areas.**

- Any construction activity between LTL and HTL except facilities for carrying treated effluents and waste water discharge into the sea, facilities for carrying sea water for cooling purposes, oil, gas and similar pipelines and facilities essential for facilities permitted under the notification.

» Dressing or altering of sand dunes, hill, natural features including landscape changes for beautification, recreation and other such purposes, except as permitted under the notification.

**Regulated activities** (requiring environmental clearance from MoEF):

- Construction activities related to defiance requirements for which foreshore facilities are essential. Residential office, hospital, workshops will not normally be permitted in the CRZ, except in very special cases.
- Operational construction for ports and harbors and light house.

- Foreshore facilities of thermal power plants for transport of raw materials, in-take of cooling water and out fall for discharge of treated wastewater or cooling water
- All other activities with investment exceeding 5 crores.

### **Coastal Zone Management Plan (CZMP)**

All the coastal states have to prepare, within one year, CZMPs identifying and classifying CRZ areas as per the Notification guidelines. These plans have to be approved by MoEF. All further development activities should be within the framework of these plans. In the interim period, before the approval of the plans, development activities should not violate the provisions of the Notification. Violations are punishable under the provisions of the Environment Protection Act of 1986. For regulating developmental activities, the coastal stretches within 500m of the HTL are classified into CRZ-I, CRZ-II and CRZ-III.

#### **CRZ-I**

Areas that are ecologically sensitive and important (national parks, coral reefs, mangroves, areas close to the breeding and spawning grounds of fishes, areas of high natural beauty, historical heritage, high genetic diversity, and those , likely to be inundated by global warming, etc.); and areas within the LTL and HTL. The following are the regulations:

- No new construction shall be permitted within 500 m of the HTL.
- No construction activity except for facility for carrying treated effluents and waste water into the sea or carrying sea water for cooling, oil, gas or similar pipelines will be permitted between the LTL and the HTL.

#### **CRZ-II**

Areas that have already been developed up to or close to the shore-line. 'Developed areas' that come within municipal limits or other legally designated urban areas which have been substantially built up and which have been provided with infra structural facilities like drainage, approach road, water supply and sewage mains.

### **CRZ-III**

- Buildings will not be permitted in the seaward side of existing roads (or those proposed in the CZMP) nor on the seaward side of the existing authorized structures.
- Reconstruction of authorized buildings to be permitted subject to the existing floor space and without change in existing use CRZ III. Areas that are relatively undisturbed and do not belong to either CRZ-I or CRZ-II.
- Areas up to 200 m. from the HTL earmarked as no development zone (NDZ). No construction will be permitted within this zone except for repairs of existing authorized structures not exceeding the existing plinth area and covered space
- Development of vacant plots between 200 m. 500 m. from the HTL, in designated areas with prior approval of MoEF, permitted for hotels and beach resorts.
- Construction or reconstruction of dwelling units between the 200m and 500m of the HTL permitted so long as it is within the ambit of traditional rights and customary uses such as existing fishing villages and gouthans.
- Extraction of sand, leveling or digging of sandy stretches, except for the structural foundation will not be permitted within 500 M. of the HTL.
- The quality of treated effluents, solid wastes, emissions and noise levels etc. must be within the standards laid down by the central or state pollution control boards

### **Island Development Authority (IDA)**

The IDA which has been vested with the following responsibilities & works under the IA Division:

- To devise various policies and programmes aimed at integrated development of the islands, keeping in view the relevant aspects of environmental protection
- To review the progress of implementation and impact of the programmes of development.

### **Studies on carrying capacity**

It has often been observed that one or more natural resource(s) becomes a limiting resource in a given region thereby restricting the scope of development portfolios. The Ministry of Environment & Forests has been sponsoring Carrying Capacity Studies for different regions. The studies involve:

- Inventorisation of the natural resources available;
- Preparation of the existing environmental settings;
- Perspective plans and their impact on natural resources through creation of business as usual scenario";
- Identification of "Hot Spots" requiring immediate remedial action to overcome air, water or land pollution;

Formulation of alternative development scenarios including a preferred scenarios.

A comparison between "business as usual" and the "preferred scenario" would indicate the future course of action to be adopted for development of the region after the package has been discussed with the local people as well as the planners.

### **Preparation and Issuance of Notifications and Amendments**

The IA Division is also responsible for preparation and issuance of various sensitive area notifications and amendments to EIA, CRZ and other EC related notifications.

All State Pollution Control Boards (SPCBs) in the country were established under the provisions of the Water (Prevention and Control of Pollution) Act, 1974. In 1981, the Air (Prevention and Control of Pollution) Act was enacted and the State Boards were given *additional powers and functions under the act*. Accordingly all the Boards were renamed as Pollution Control Boards from the earlier name, which recognized them as Water Pollution Control Boards.

The Boards were initially entrusted with the responsibility of controlling water pollution and restoring and maintaining the wholesomeness of water bodies in the State. The responsibilities

have widened over the years and now include implementation of the following statutes aimed at protecting the environment.

**The Water (Prevention and Control of Pollution) Act;**

- The Water (Prevention and Control of Pollution) Rules;
- The Water (Prevention and Control of Pollution) Cess Act;
- The Water (Prevention and Control of Pollution) Cess Rules;
- The Air (Prevention and Control of Pollution) Act;
- The Air (Prevention and Control of Pollution) Rules;
- The Environment (Protection) Act;
- The Environment (Protection) Rules;
  - Manufacture, Storage and Import of Hazardous Chemical Rules; Hazardous Wastes (Management and Handling) Rules; Manufacture, Use, Import, Export and Storage of Hazardous Micro organisms,
- Genetically Engineered Organisms or Cells Rules;
  - Chemical Accidents (Emergency Planning, Preparedness and Response) Rules;
- Environment Impact Assessment and Public Hearing Notifications;
- The Biomedical Waste (Management and Handling) Rules;
- Recycled Plastic Manufacture and Usage Rules;
- The Noise Pollution (Regulation and Control) Rules;
- The Municipal Solid Wastes (Management and Handling) Rules;
- The Batteries (Management and Handling) Rules.

The primary role of state pollution control boards in the existing national level EC process consists of the following three activities:

- Screening the project proposals;
- Issuance of No objection certificate; and

- Conduct of Public hearing and sending the minutes of meeting to IA Division of MoEF.

The process or procedure of how the above-mentioned activities are carried out varies between some of the State Pollution Control Boards.

### **Future prospects and policy alternatives**

The above discussion clearly indicates that there is an urgent need for making appropriate changes in our environmental policies. Environmental policy improvements strive to bring about policy changes that will improve the management of scarce natural resources and environmental goods and services.

UN estimates suggest that the world in 2050 will consist of somewhere between 7.7 billion and 11.1 billion people. The decisions that the world's 500 million adolescent girls, and 1.35 billion women of child bearing age in the next ten years will have an enormous impact on the rate of population growth, and consequently, *on the quality of life for all people. In a world, where 1 billion people go to bed hungry, 1.1 billion are without clean water to drink, and 2.8 billion lack access to basic sanitation, stabilizing global population growth is one of the most significant contributions we can make to the 21st century. To realize our targeted goals specified in our environmental policies for achieving sustainable development, we have to improve upon our population policies that slow the pace of population growth and improve the overall quality of people's lives.*

### **CHECK YOUR PROGRESS**

1. Discuss the basic principles of ecological planning and describe their relevance for the tourism sector.
  - a. Integrated decentralized environmental planning b. CRZ
2. Critically evaluate the environmental planning process in India. Discuss the potentials for improvements.
3. Write a note on Coastal Area Management policy in India.
4. List out the activities prohibited in the CRZ in India.
5. Explain the studies on the carrying capacity by the Government of India.

## LESSON-9

### ECOTOURISM AROUND THE WORLD

#### Global Trends in Ecotourism

ET has a long history and is becoming a popular approach to protect natural areas. It is likely to result in isolated specialized reserves, scattered around the world, rather than vast protected tracts due to the scale (necessarily smaller), of activities associated with it.

ET is a large and fast growing industry, accounting for US \$ 2 billion globally in 1996 e.g. at a NP in Ontario, bird watchers at the peak of the birding season, spent \$ 3.8 million within 24 days in May, out of which 2.1 million was spent locally. In terms of number of tourists belonging to this niche segment, we are concerned with a fastly expanding market - E.g. Belize, Brazil 99,000 in 1987 to 2, 15,442 in 1991; Monteverde Cloud Forest Reserve, Costa Rica-471 in 1974 to 40000 by, 1991; Nepal -10,000 in 1965 to 2,50,000 in 1990.

Though the tourist volume is small, ET can generate sufficient revenue, especially from foreign tourists (true for at least a few sites) - e.g. 1993 data-Madagascar \$ 275 to 360 / trip to see lemurs; Belize, \$ 350/trip for coral reef diving; ACAP, Nepal, additional fees of INR 121/person (80,000 trekkers/year, generating INR 97 lakes/year).

Interestingly, most eco-tourists are from North America and Europe, while most, eco-tourism destinations are in developing countries that have areas of great natural beauty but are also plagued by poverty, inadequate local participation and tourism developments that are unregulated. For instance, South Africa has witnessed a 108% growth rate in ET.

It is encouraging to note that throughout the world, there is a growing need for "greeting" the tourism industry and to "eco-sell" tourism and travel, as modern tourists are seeking destinations with unspoiled natural beauty. Unfortunately, some tour companies regard ET as a passing fad or a gimmick or a buzzword and consider it, conveniently as a synonym with any offering resembling an "outdoor activity," whether it takes -a responsible approach to the environment or not. Often the ET label is misused by tourism

operations in what is known as "green washing," or "green cloaking" which include unregulated development of relatively undisturbed areas, appropriation of ancestral lands, or just applying traditional tourism development models under the name of ecotourism. For example there is a 200-room "eco-lodge" in the Brazilian Amazon with no sewage treatment, no involvement with local communities and no effort to lower the social or environmental impacts created. Sadly, many State tourism development corporations in our country too have joined the bandwagon by ignoring the very definition of ET and have started promoting nature based mass tourism without integrating, environmental and socioeconomic sustainability into their programmes.

If ET becomes uncontrollable, large numbers of eco tourists will quickly constitute a mass and begin to impact on the local physical, biological and cultural environment. The resultant impacts will be no different than that of mass tourism perhaps they can be even greater. Since the destination areas are located in ecologically/culturally sensitive areas, the anticipated impacts would be more severe and irreversible. Claims that we can protect nature, benefit local communities and also bring national revenues are faced with a different reality on the ground. From Thailand to Belize, ecotourism has opened the doors to more forest destruction. Indigenous peoples in affected areas have been forced out of their traditional lands in some cases. Reports are also growing that such "tourists" are illegally collecting forest plants with potential medicinal value for the fastly expanding biotechnology industry.

#### **United Nations and Eco tourism:**

##### **Quebec declaration**

In the framework of the UN International Year of Ecotourism, 2002, under the aegis of the United Nations Environment Programme (UNEP) and the World Tourism Organization (WTO), over one thousand participants coming from 132 countries, from the public, private and non-governmental sectors met at the World Ecotourism Summit, hosted in Quebec City, Canada, by Tourism Quebec and the Canadian Tourism Commission, between 19 and 22 May 2002.

#### **UN Initiatives on Ecology and Environment**

The United Nations is the global leader in defining and coordinating a sustainable development agenda - addressing long-term goals to reduce poverty, improving access to education, and improving health status in less developed countries.

The UN Foundation's mission is to support the goals and objectives of the United Nations and its Charter, in order to promote a more peaceful, prosperous and just world - with special emphasis on the UN's work on behalf of economic, social, environmental and humanitarian causes. The following discussion is restricted to ecological environmental initiatives of UN that are relevant for the tourism sector.

### **UN Environment Program (UNEP)**

UN Environment Programme was established as a result of the United Nations Conference on the Human Environment, held in Stockholm in 1972. Its mission is to provide leadership and encourage partnerships in caring for the environment by enabling nations and peoples to improve their quality of life without comprising that of future generations. Its major priorities include.

- Environmental monitoring, assessment and early warning;
- Promoting environmental activities throughout the United Nations system;

Raising public awareness on environmental issues;

- Facilitating information exchange on environmentally sound technologies;
- Providing technical, legal and institutional advice to Governments.

UNEP has been appointed by the Commission on Sustainable Development (CSD) as the Interagency Coordinator or lead agency responsible for implementation of Agenda 21. Together with the World Tourism Organization (WTO/OMT), UNEP is the main focal point on sustainable tourism for CSD and the Convention on Biological Diversity (CBD).

UNEP has developed a strategy for sustainable tourism development addressing the following objectives:

- To promote sustainable tourism among government agencies and the industry.

- To develop sustainable tourism tools for protected/sensitive area management.

- \* To support implementation of multilateral environmental agreements related to tourism (such as CSD, Biological Diversity, Climate Change, Regional Seas, Marine Impacts from Land-Based Activities, Migratory Species, CITES, Ramsar, World Heritage and others).

The Tourism Programme, a reference point on tourism within the framework of UNEP, is part of the UNEP DTIE Production and Consumption Unit, which includes the Cleaner Production and Sustainable Consumption Programmes. The concepts of-cleaner production and sustainable consumption have important implications for the tourism industry. Other UNEP programs and units which have been dealing with-the issues related to tourism, include:

- Division of environmental conventions
- Division of environmental information assessment and early warning
- Global programme of action for the protection of the marine environment from land-based activities
- Mediterranean action plan
- The Caribbean and the East Asia Regional Coordination Units
- Regional Office for Asia and the Pacific and other regional offices
- UNEP/GEF coordination office and the Convention on Biological Diversity.

More recently, the World Conservation Monitoring Centre (WCMC) in London has become<sup>1</sup> a UNEP collaborating agency and is expected to work closely with other UNEP units on the issue.

The UNEP Tourism Programme's mission is to ensure that conservation (through sustainable management and use) of the natural, cultural and man-made environment is an integral part of all tourism development. The following are its major objectives:

- Increase in the benefits tourism can bring to sustainable use of natural resources, including biodiversity.
- Reduce tourism-related degradation and pollution of natural resources including biodiversity.
- Facilitate cross-cultural learning and environmental education.

\* Increase the quality of life of the people who live in tourism destinations through poverty alleviation, employment, and distribution of economic benefits, particularly in developing countries.

### **World Heritage Sites**

World Heritage sites (designated under the World Heritage Convention UNESCO, 1972) are places of "outstanding universal value...for whose protection it is the duty of the international community as a whole to cooperate." UNF is focusing its support on the subset of world heritage sites recognized as containing the most important habitats for biodiversity (including cultural diversity) conservation in the world the world's most wondrous places.

Despite their international recognition, world heritage sites face many of the same problems threatening biodiversity around the globe, including habitat loss, invasive species, over-exploitation, or pollution. Furthermore, the status of these sites has not often translated into national or international assistance for their conservation, and many sites suffer from a lack of resources.

The UN Foundation has partnered with the UN Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Centre to support and promote the management and conservation of World Heritage Natural sites. By nurturing world heritage sites, UN Foundation hopes to help sustain some of the planet's most important biological jewels while using projects in these sites to promote replicable conservation approaches that respond to human concerns, build greater public urgency about the need to protect biodiversity, and leverage increased funding for biodiversity initiatives.

## **Programme Framework on Climate Change**

Pending further experience, the UN Foundation/UNFIP "Interim" Sustainable Energy/Climate Change Program will focus and concentrate grant making on programs and projects designed to:

- Develop and demonstrate sustainable and commercial approaches to deliver community-based renewable energy services;
- Improve energy efficiency in the industrial, residential, and commercial sectors through market-oriented policies and programs; and
- Promote the clean development mechanism (COM) as a 'market incentive'<sup>1</sup> to engage the private sector in the areas of renewable energy and energy efficiency.

This strategic focus is intended to produce tangible and replicable results on the ground, it allows for strategic grant-making that will have an important impact by targeting priority areas that contribute to mitigating climate change. At the same time, these activities will demonstrate benefits for sustainable development, support UN mandates and priorities, and play a catalytic role to leverage additional funding.

The "Interim" Program Framework gives a high priority to partnerships with the private sector, NGOs, government agencies, financial and donor communities, together with UN agencies active in the energy/climate change area. As we enter the 21st century, global climate change has emerged as one of the most significant challenges facing human society, in response, the UN has facilitated the development of several critical agreements that provide a framework for international cooperation on this issue. These include two major international agreements to reduce emissions of greenhouse gases: the UN Framework Convention on Climate Change (UNFCCC) in 1992 and the Kyoto Protocol in 1997.

The UN Foundation on Sustainable Energy and Climate Change Program will primarily focus on the major GHG-emitting developing countries, including China, India, and Brazil, which account for 50% of GHG emissions in the developing world. In

recognition of the UN Foundation's innovative market-oriented approaches and achievements in accelerating climate-friendly technologies in the developing world, the UN Foundation's Sustainable Energy and Climate Change Program has won the prestigious 2001 World Climate Technology Award and Energy Globe Award 2002.

#### **United Nations Development Programme (UNDP): UNDP:**

- Funded by the voluntary contributions of almost every nation on earth.
- Helps countries build capacities for people-centered, sustainable development, working with government policy-makers, and with people and their organizations;
- Supports programmes in 174 developing countries and territories through a network of 132 country offices;
- Focuses on poverty eradication and livelihoods for the poor," gender equity,-environmental regeneration and good governance;
- Stimulates development dialogue and action by commissioning-a yearly Human Development Report and supporting the production of National Human Development Reports in 110 countries;
- Coordinates the country-level development activities of all UN organizations;

#### **FAO**

FAO was founded in 1945 in Quebec, Canada, It:

- Works to eradicate hunger and malnutrition and to raise the levels of nutrition; today, more than 800 million people, including 200 million children under five, suffer from chronic malnutrition;
- Assists its Member States in the sustainable development of their agricultural sector, including fisheries and forests, and to improve the preservation and distribution of agricultural products.

## **UNESCO**

UNESCO came into being in 1946. Its main functions are to:

- Serve as a think tank to facilitate understanding of major developments in today's world and draw intellectual and ethical guidelines;
- Ask authorities to set objectives, and adopt the corresponding policies, in the fields of education, science, culture and communications, and advance international law by developing normative instruments in these fields;
- Serve as an international centre for the exchange of information on trends in the areas of education, sciences, culture and communications;
- Facilitate the progress, transfer and sharing of knowledge by encouraging research, training and education;
- Provide technical expertise to assist countries in formulating their policies and development projects.

## **WHO**

**WHO was established in 1948 to:**

- Direct and coordinate international health work and promote technical cooperation in this field;
- Assist Governments, upon request, in strengthening health services; Provide appropriate technical assistance and, in emergencies, necessary aid at the governments' request;
- Stimulate and advance work on the prevention and control of epidemic, endemic and other diseases; and
- Promote and coordinate biomedical and health services research.

## **The World Bank**

The Bank is a partner in opening markets and strengthening economies, its mission is to improve the quality of life and increase prosperity for people everywhere, especially the world's poorest. Believing that social objectives must be supported by economic stability, it brings to the development table the ability to raise money

for development projects at the lowest market rates and to lend that money to its clients for productive purposes;

World Bank provides loans to the governments of developing countries to finance investments and promote economic growth in infra structure projects like roads, schools, clinics, and irrigation networks; and activities such as training for teachers and nutrition improvement programs for children and pregnant women. Its loans can also finance changes in the structure of countries' economies to make them more stable, efficient, and market-oriented;

The Bank is working to address the challenge of inclusion by identifying and engaging the real face of development. The Bank recognizes that stakeholders in development are not only governments, but the full range of civil society, from public and private sectors and the NGO community to women and children, and the poorest of the poor;

Working with all partners, the Bank is supporting its client countries to: invest in their people;

- Protect their environment;
- Stimulate private business;
- Reorient government;
- Undertake economic reform programs;

The World Bank is a development institution made up of five closely associated institutions:

- The International Bank for Reconstruction and Development (IBRD), lending to developing countries with relatively high per capita incomes;
- The International Development Association (IDA), providing interest-free loans to the poorest developing countries;
  - The International Finance Corporation (IFC), promoting growth in developing countries by providing support to the private sector;
  - The Multilateral Investment Guarantee Agency (MIGA), providing guarantees to foreign investors against loss caused by non-commercial risk,

- The International Center for the Settlement of Investment Disputes (ICSID), promoting international investment through conciliation and arbitration of investment disputes between foreign investors and their host countries.

### **The Millennium Development Goals**

In September 2000, the world's leaders gathered at the UN Millennium Summit to commit their nations to strengthening global efforts to realize their ambitious targets for peace, human rights, democracy, strong governance, environmental sustainability and poverty eradication, and to promoting principles of human dignity, equality and equity with clearly defined deadlines.

At the 2000 Summit, the UN General Assembly also asked the UN Secretary-General to prepare a road map for achieving the Declaration's commitments—resulting in the Millennium Development Goals, made up of 8 Goals, 18 targets and 48 indicators. The goals are unique in their ambition, concreteness and scope. They are also unique in their explicit recognition that the Goals for eradicating poverty can be achieved only through stronger partnerships among development actors and through increased action by rich countries—expanding trade, relieving debt, transferring technology and providing aid.

The Millennium Development Goals address many of the most enduring failures of human development. Unlike the objectives of the first, second and third UN Development Decades (1960s, 1970s, 1980s), which mostly focused on economic growth, the Goals place human well-being and poverty reduction at the centre of global development objectives— an approach advocated by the *Human Development Report* since its inception.

The Millennium Development Goals are benchmarks for progress towards a vision of development, peace and human rights, guided by "certain fundamental values essential to international relations in the twenty-first century. These include: freedom, equality, solidarity, tolerance, respect for nature and shared responsibility.

## **WMO**

The World Meteorological Organization was created in 1950 to succeed the international meteorological organization that 'had existed since 1873. In cooperation with national meteorological and hydrological services, WMO:

- Coordinates and facilitates the international production, rapid exchange and analysis of information on weather, water, climate;
- Further the application of meteorology and operational hydrology, to transport, water problems, agriculture, environmental issues and other human activities, such as natural disaster mitigation;
- Promotes research and training in the science of meteorology and hydrology.

### **International year of Eco Tourism:**

The United Nations has designated the year 2002 as the International year of Ecotourism. The UN Commission of Sustainable Development has formulated the United Nations Environment Programme and the World Tourism Organization is co-coordinating and carrying out international ecotourism activities.

The World Tourism Organization (WTO) is co-coordinating a series of activities leading up to and during the IYE with UNEP and other international and regional organizations, as well as its member states, affiliated members and other groups. On the occasion of the IYE, WTO and other collaborating parties have agreed that ecotourism concept reflects all forms of ecotourism, in which, the tourists' main motivation is the observation and appreciation of nature, that contribute to the conservation of and that generates minimal impacts upon the natural environment and the cultural heritage.

### **Objectives of IYE:**

WTO has defined the following objectives of IYE.

It should generate awareness among public authorities, private sector, civil society and consumers regarding ecotourism, capacity to improve conservation of the natural and cultural

heritage and local communities' standards of living, as well as encourage respect for nature, indigenous cultures and their diversity.

It should disseminate methods and techniques for ecotourism planning, management and regulation and monitoring to ensure its long term sustainability.

It should promote exchanges of experience with ecotourism, to increase opportunities for efficient marketing and promotion of ecotourism destinations and products.

To promote minimum quality standards as well as trustworthy and comparable certification systems for ecotourism suppliers.

Regional WTO conferences are being organized to exchange experiences, examine problems promote co-operation nationally and internationally and identify future challenges. Regional preparatory meetings have already been held for a. Africa, the Americas, CIS countries, Europe and Mediterranean Europe and middle East and North Africa.

#### **Nature Based Tourism:**

Studies concerning nature tourism have shown up to 50 percent of all tourists world like to visit a natural area. These tourists world like to visit a natural area. These tourists do not want to travel in small groups, learning about wild life and culture with a local guide.

#### **Ecologies:**

According to International Ecology guidelines, ecologies are most often found in wilderness areas that are least developed, most remote areas<sup>4</sup> in any country, and therefore the last places to receive government investment in health, education electricity, water and road set. The management and operation of an Ecology differs from that of a mainstream hotel for many reasons which explain for their small size and profits.

Improving of the green performance of the ecotourism industry, will primarily involve a process of working with small individually owned businesses that operate in remote areas and helping them to find solutions to the difficult problem of working

profitably, in areas that often lack the full range of government services or oversight.

**Africa:**

Private nature reserves and eco tourist's destinations are being developed in Africa; the reserves are established primarily for conservation purpose and are increasingly viable economically, due to tourism income.

**The International Eco Tourism society (TIES):**

The process of establishing principles of ecotourism has been taken by the international Eco Tourism society (TIES). TIES has studied the guideline development process to evolve methods to make the variety of stakeholders to adopt sustainability principles.

TIES has adopted a standardized approach to the development of ecotourism guidelines. The least practice information is gleaned from industry members through surveying. Secondly participatory multi-state holder meetings are held in various parts of the world. The stakeholders in ecotourism are researchers specializing in impacts in natural areas and local people, industry, NGOs and communities. Finally international review takes place, helping to ensure, that a wide variety of view points from many nationalities are incorporated.

TIES has completed this procedure. Efforts to certify ecotourism are at the earliest stages of development. Certifying ecotourism involves gathering data on their environmental and social performance and their verifying these data. Australia has established ecotourism specific certification programme in the whole world.

**Ecotourism in the world:**

Ecotourism based travel in the world began to thrive in the 1980s as there was growing interest, in outdoor travel and environment, supported by the excellent new outdoor equipments for camping and hiking and events such as earth day.

**Australia:**

The Australian Government has prepared the first ecotourism plan in the world in 1994 and it is the most important example of national ecotourism planning. A small group working on behalf of the Federal Government undertook a literature review and proceeded to public consultation, involving local government agencies, natural resource managers, tour operators, tourism marketers, planners, conservation and community groups, developers and indigenous Australians.

There are an estimated 600 ecotourism operators in Australia today, approximately 85% of these employ fewer than 20 staff. Eco tourism businesses are estimated to have a annual turnover of some \$250 million and to employ a total staff of around 6500, the equivalent of 4500 full-time staff (Sport and Tourism Division Australian Government, 1999).

There has been a considerable increase of international visitors to Australia's national parks, with a rise in visitor numbers between 1993 and 1996 from around 1.2 million to more than 1.6 million, an increase of 33.3 percent. By 1998, this figure had increased to nearly 1.7 million, or 47% of all inbound visitors to Australia aged 15 and over reported having visited national parks. (Bureau of Tourism Research, cited by Sport and Tourism Division Australian Government, 1999).

In Australia, recent research found eco tourists to account nearly 30% of domestic travelers (eco trends 1999, cited by Wight, in press)

**Brazil:**

In Brazil, the Government has established International Ecotourism Task Force in the 1990s.

Ecotourism activities throughout the world suffer from many weaknesses. The most important ones are the lack of qualified staff, infrastructure, legislation, facilities and international setup.

Progress is more evident in countries where ecotourism has been integrated as important tools in the national plans. However, despite the recognition that ecotourism is the best alternative for

tourism development, separating it from the alternative forms of tourism has not learn easy.

Five million visitors came to Brazil in 1999, five times as many as in 1991. Brazil has more than 150 conservation areas, of which 40 are National Parks. An estimated number of 3.5 million visitors went to these National parks in 1998. Especially the last two years the number of foreign eco tourists has grown, it had 600,000 Brazilian eco tourists and attracted 200, 000 foreign eco tourists in 1998 (Jane-r, 2000).

### **Heritage Tourism programme St. Lucia**

Heritage Tourism Programme is a programme which is jointly funded by the European Commission and the Government of St. Lucia. It was established in 1998, to establish heritage tourism as a viable and sustainable component of St. Lucia's tourism product through facilitating a process of education, capacity building, product development, marketing, credit access and promotion of environmental and cultural protection for the benefit of last communities.

The Heritage Tourism Programme operates at five levels. The public awareness and community mobilization element is centered around national campaigns focusing on economic and employment opportunities and on the link between environmental management and sustainable tourism development. The programme seeks to increase the capacity of individuals, and organizations within government, civil society and private sector through training, technical assistance, strategic planning and organizational development process. The programme offers a range of facilities and services aimed at facilitating the involvement of new, small entrepreneurs and creating new tourism product. It also collaborates with relevant national and regional partners, to define and market the heritage tourism product, as well as promoting the island as a sustainable tourism destination.

### **USA**

Domestic and international travelers made nearly 287 million recreation visits to the 378 recreation areas administered by the U.S. National Park Service (NPS) in 1998 compared to the 275 million visits in 1997. This is an increase of 4.4% (Travel industry Association of America, 2000).

Travel to the United States. National Parks Service areas generated direct and indirect economic impact for local communities of US\$ 14.2 billion and supported almost 300,000 tourist-related jobs during 1996. It is unknown what portion of these visitors represented participation in ecotourism activities (Tourism Works for America, 1997).

### **Belize**

In 1999 49.4% of 172,292 tourists of Belize visited Mayan sites, 12.8% visited parks and reserves. Important reasons for visiting Belize are: to observe scenic beauty, to be in a natural setting and to observe wildlife (Higgins, 2000). Cayes and Barrier reefs were visited by 87% of visitors. 82% of visitors of Belize were in the age group of 18 to 50 years old and 65% were college graduates (Higgins, 2000)

### **Peru**

An estimated 10.3% of tourists who visit Peru prefer to go bird watching in natural areas (Proyecto PRA, 2000). According to studies carried out by Prom Peru (2000) 47% of foreign tourists of Peru visited natural zones. Of this number, 44% combined visiting natural zones with visiting cultural attractions and 3% came only to visit natural zones. The flow of visitors of 26 of the 52 Areas Naturales Protegidas por el Estado - ANPE (Protected Natural Zones by the State), increased 250% during the 1990-1999 period. Just in 1999, the number of visitors was estimated in 642 336, according to the figures provided by the Instituto Nacional de Recursos Naturales - INRENA (National Institute of Natural Resources) (Promperu, 2000).

### **UK**

Research conducted by MORI for ABTA indicated that 85% of UK holiday makers believed that it is important not to damage the environment, 77% think that it is important that their visits include experience of local culture and food and 71% feel that tourism should benefit the people of the destination visited, through jobs and business opportunities. 52% said they would be interested in finding out more about local issues (environmental and social) in their chosen resort before they booked their holiday.

## **Coastal Ecotourism in South Asia:**

South East Asia is one of the world's fastest growing areas with respect to ecotourism development. There is a trend away from over crowded beaches and resorts to more nature-based tourism. According to one study from Thailand, 30-percent of foreign and 67 percent of domestic tourists can be considered eco tourists.

A variety of coastal ecosystems are available in Southeast Asia for development of ecotourism. Malaysia, Thailand and the Philippines, are important areas for the potential growth of scuba diving in Southeast Asia. In Sabha, Malaysia, 15,000 to 20000 overseas divers gather annually.

Southeast Asian countries have systems to protect their coastal resources in designated areas.

Community based tourism is formulated on two concepts. They are community based management and alternative livelihood. Community based management concept is vested with the regulating power over natural resources is placed in the hands of the resource users and stakeholders. Alternative livelihood focuses on providing a sustainable income, so that coastal residents need not resort to over fishing or use of destructive methods. Community based sanctuaries in Indonesia and Philippines with strong links to the community based ecotourism as an alternative livelihood.

### **Thailand:**

In Thailand, ecotourism is one of the components of the National Tourism Master Plan 2001-2010. Thailand the leader in ecotourism development in South East Asia is noted for its trekking scuba diving and nature tours. In 1999, Thailand had 21 marine natural parks along the Andaman Sea and the gulf of Thailand.

### **Philippines:**

Philippines has been identified by Conservation International as a country with tremendous ecotourism potential. The National Eco tourism Act was passed in 1998. This Act has set out the framework for a national ecotourism strategy to be supported by a programme and a network of sites to be identified as National

Integrated protected Areas (NIPAS) as well as other areas. A national policy making body, the National Ecotourism Development Council (NEDC) has been created to establish the national strategy and is supported by regional committee.

Phillipines' successful ecotourism image is the result of collective environmental awareness efforts. The government, city governments, NGOs, and the local residents are involved in environmental protection. Phillipines' potential for strong development for coastal tourism is linked to increasing environmental protection, reef conservation, alternative livelihood and marine protected areas.

#### **Malaysia:**

Malaysia was first in the region to have a national eco tourism plan. The plan was set up to tap ecotourism's vast potential and has become a tool for sustainable development of the tourism industry. Malaysia continues to develop and upgrade its coastal ecotourism through more systematic monitoring of the quality of island of ecotourism and home stay packages. Apart from the private sector, much depends in local governments, island development authorities and island management boards, guiding island's coastal ecotourism.

#### **Nepal**

The Annapurna areas are the most popular trekking destination in Nepal. Since 1989, the number of trekkers coming to the areas has increased at an annual rate of approximately 18%. In 1997, 50,708 international trekkers visited the area. Out these 12,000 visited the Annapurna sanctuary (Gurung).

#### **Nature and Ecotourism Accreditation Programme (NEAP):**

This programme the first of its kind in the world has been introduced in Australia. It was designed to provide a mechanism by which the country's nature tourism and ecotourism sectors could continue to work towards the ideal of long term-environmental, socio- cultural and economic sustainability. The programme is a voluntary, industry based initiative developed in consultation with key stake holder groups. This programme was identified in Australia's National Ecotourism Strategy as a key way to help ensure sustainability, raise industry standards, provide a means of

industry self regulation, and deliver marketing advantages, to Australian ecotourism operators.

NEAP has been a collaborative and consultative effort. The programme was drawn on the collective expertise fields like, protected area management, guiding and guide training, environmental consulting, business accreditation and tourism marketing. This programme provides comprehensive criteria for assessing nature tourism and ecotourism products. It also seeks to create linkages with existing tourism business accreditation programmes and protected area licensing systems.

NEAP applies to two industry sectors viz. nature tourism and ecotourism.

#### **Integrating bio-diversity conservation:**

The bio-diversity planning support programme (BPSP) of UNEP/UNDP/CEF has a mandate to provide assistance to national bio-diversity conservation planners, as they develop and implement their national bio-diversity, strategies and action plans. BPSP is now carrying out a study on integration of bio-diversity into the tourism sector with a specific tourism how best to incorporate global best practice into national bio-diversity strategy and action plans.

#### **Costa Rica**

In Costa Rica, the Government authorities, with strong collaboration of the tourism industry, and a number of NGOs have consolidated the ecotourism process. The Government tries to integrate ecotourism into a diverse mosaic of tourist activities and attractions with the aim of offering a single extensive tourist product.

The Costa Rican Government has divided the country into clever conservation areas. The National system of conservation areas (SINACs) covers the administration of all the national territory, in protected areas as well as in the rest of the territory where bio-diversity conservation is promoted and regulated.

#### **South Africa:**

In South Africa, ecotourism has been playing a dual role where it serves to integrate the nation into the world economy, and

to help to redress the grievances and redistribute the wealth to the country poor. Eco tourism is recognized as a social change.

In the period of 1986 until 1998 the number of visitors to game and nature reserves in South Africa has grown by 108% annually. In 1986 the number of visitors to the reserves was 454,428, in 1998 this number has grown to 5,898,000 visitors. Game and nature reserves are the number one activity for visitors to the country in 1997 (60%), rising by 2% over the previous year (South African Tourism Board, 1998).

### **Galapagos Islands**

Galapagos nature tourism has grown steadily since the pioneering days of the 1970's, to the present level of over 60,000 visitors a year, making a \$100 million-plus contribution to the Ecuadorian economy (estimates vary) (Charles Darwin Research Station, 2001)

### **Kenya**

From 1983 to 1993 visitor arrivals to Kenya grew by 45% (372,000 to 826,000). The Kenya Wildlife Service (1995) estimates that 80% of Kenya's tourist market is drawn by wildlife and that the tourism industry generates one-third of the country's foreign exchange earning. Revenue from Kenya's wildlife parks increased to Ksh. 711 million in 1995. (In 1997 US\$1 =60KS).

### **Positive Aspects of Ecotourism:**

The National World Wild Life Federation has listed 2391, national international and regional conservation organizations and more. Seventy five percent of the Americans regard themselves as environmentalists. There are 900 adventure travel organizations in the USA specializing in 'horseback trips'<sup>3</sup>. Bungee jumping, whale watching, swimming with dolphins, catch and release fishing, lama trekking, and rain forest canoe trips.

Ecotourism provide reading lists, lectures, and opportunities to work side by side with a naturalist in a field setting. Tour providers and hotels are responding to measures to be environmentally conscious in many was. Ecotourism is an integral part of the sustainable - use abroad, to the environment and is at

the root of many international efforts, to set aside protected areas, in the form of national parks and reserves.

The advent of ecotourism has fostered international cooperation. Ecotourism benefits the local country with increased revenues. The nature traveler spends more money (\$1000) in two weeks in a country than the recreation traveler.

**CHECK YOUR PROGRESS:**

1. Explain the role of United Nations Organization in the development of ecotourism in the world.
2. Discuss the UN Environment Programme
3. Describe the role of the World Bank in the development of the ecotourism around the world.
4. Write a note on the International Ecotourism (IYE)
5. Describe the ecotourism development around the world.