CONTENTS

ECOLOGY OF TOURISM AND TOURISM IMPACTS (MTTM 403)

UNIT1: ECOLOGY AND ENVIRONMENT - DEFINITION AND DIFFERENTIATION; ABIOTIC AND BIOTIC COMPONENTS OF ENVIRONMENT

STRUCTURE:

1.1   INTRODUCTION:

In the present chapter we will be discussing about ecology and environment, after having a look on its meaning and definitions, we will study how ecology is different from environment. Ecology is the study of the relationship(s) of an organism between it and its environment and the environment is the set of circumstances surrounding that organism. Further abiotic and Biotic Components of Environment of ecology are discussed in detail that Biotic and abiotic factors are interrelated. If one factor is changed or removed, it impacts the availability of other resources within the system.

1.2   OBJECTIVES:

After studying this unit, you will be able to

- Explain the meaning of ecology and environment
- Describe the differences between of ecology and environment
- Explain what are the abiotic factors on earth

- Understand the different Biotic factors
- Explain how abiotic and Biotic factors are interrelated

1.3   MEANING OF ECOLOGY:

The term oekologie (ecology) was coined in 1866 by the German biologist, Ernst Haeckel from the Greek oikos meaning "house" or "dwelling", and logos meaning "science" or "study". Thus, ecology is the "study of the household of nature". Haeckel intended it to encompass the study of an animal in relation to both the physical environment and other plants and animals with which it interacted.

This definition encompasses not only the plants and animals that Haeckel recognized but microscopic organisms such as Bacteria, Archaea and Protozoa, as well. The interactions that determine an organism's distribution and abundance are processes that include energy flow, growth, reproduction, predation, competition and many others.

Ecology is that branch of sociology that is concerned with studying the relationships between human groups and their physical and social environments or it is the study of the detrimental effects of modern civilization on the environment, with a view toward prevention or reversal through conservation (Sharma, n.d.).

Definitions:

- 1866 Ernst Haeckel: the comprehensive science of the relationship of the organism to the environment
- 1927 Charles Elton: Scientific natural history
- 1963 E. P. Odum: The study of the structure and function of nature
- 1972 C. J. Krebs: The scientific study of the interactions that determine the distribution and abundance of organisms (Definition of Ecology, n.d.).

1.4   MEANING & DEFINITIONS OF ENVIRONMENT:

The term "environment" which etymologically means "surrounding", comprises of air, water and land. Environment creates favourable conditions for the existence and development of living organism / Environment can be defined in a number of ways. For example,

- "Environment is a sum of all social, economical, biological, physical or chemical factors which constitute the surrounding of man, who is both creator and moulder of his environment".
- "'Environment refers to the sum total of conditions which surround man at a given point in space and time".   *(C.C. Park1980)*

- "Environment is the representative of components of the earth wherein man is the important factor influencing the environment".

(Gaudie 1984)

- "Environment is a holistic view of the world as it functions at any time, with a multitude of special elemental and socio-economic system distinguished by quality and attributes of space and mode of behavior of biotic and abiotic forms".

However environment is viewed with different angels by different environmentalists. It may be concluded that environment consist of an inseparable whole system constituted by physical, chemical, biological, social and cultural elements which are interlinked individually and collectively in myriad ways (Singh, n.d.).

1.5   CHECK YOUR PROGRESS - 1

1.5.1 Fill in the Blanks:

(a) The term oekologie (ecology) was coined in 1866 by the _____ biologist.

(b) Ecology is the study of the household of_____.

(c)_____**:** The study of the structure and function of nature.

(d) Environment is viewed with different angels by different _____.

(e) The term environment which etymologically means_____.

1.6   DIFFERENCE   BETWEEN   ECOLOGY   AND ENVIRONMENT:

Ecology - the study of the relationship of plants and animals to their physical and biological environment. The physical environment includes light and heat or solar radiation, moisture, wind, oxygen, carbon dioxide, nutrients in soil, water, and atmosphere. The biological environment includes organisms of the same kind as well as other plants and animals. Environmental studies - is the systematic study of human interaction with their environment. It is a broad field of study that includes the natural environment, built environments, social environments, organizational environments, and the sets of relationships between them. Environmental scientists conduct laboratory and field studies to learn about a range of factors that influence an area. An environmental study is distinct from ecology and environmental science (What is the difference between ….).

1.7 ABIOTIC COMPONENTS OF ENVIRONMENT:

Abiotic components are the nonliving components of the biosphere. Chemical and geological factors, such as rocks and minerals, and physical factors, such as temperature and weather, are referred to as abiotic components.

These are non-living chemical and physical factors in the environment which affect ecosystems. Abiotic phenomena underlie all of biology. Abiotic factors, while generally downplayed, can have enormous impact on evolution. Abiotic components are aspects of geodiversity. They can also be recognised as "abiotic pathogens".

From the viewpoint of biology, abiotic influences may be classified as light or more generally radiation, temperature, water, the chemical surrounding composed of the terrestrial atmospheric gases, as well as soil. The macroscopic climate often influences each of the above. Not to mention pressure and even sound waves if working with marine, or deep underground, biome.

Abiotic factors are essentially non-living components that effect the living organisms of the freshwater community. When an ecosystem is barren and unoccupied, new organisms colonising the environment rely on favourable environmental conditions in the area to allow them to successfully live and reproduce (Abiotic components).

These environmental factors are abiotic factors. When a variety of species are present in such an ecosystem, the consequent actions of these species can affect the lives of fellow species in the area; these factors are deemed biotic factors.

All of these factors affect different organisms to different extents. If there is little or no sunlight then plants may wither and die from not being able to get enough sunlight to do photosynthesis. Many archaea require very high temperatures, or pressures, or unusual concentrations of chemical substances, such as sulfur, because of their specialization into extreme conditions.

Biotic and abiotic factors are interrelated. If one factor is changed or removed, it impacts the availability of other resources within the system. Biotic and abiotic factors combine to create a system or more precisely, an ecosystem. An ecosystem is a community of living and nonliving things considered as a unit. If a single factor is changed, perhaps by pollution or natural phenomenon, the whole system could be altered. For example, humans can alter environments through farming or irrigating. While we usually cannot see what we are doing to various ecosystems, the impact

is being felt all over. For example, acid rain in certain regions has resulted in the decline of fish population. Abiotic and biotic factors are present in every ecosystem and community. They work together to provide a working environment that is best for all living things. Abiotic factors are very diverse, but each one plays its own role in ecosystem maintenance

1.8   DIFFERENT ABIOTIC FACTORS ON EARTH:

Any nonliving thing is an abiotic factor.

- Water
- Oxygen
- Sunlight
- Wind
- Carbon dioxide

In a very simplistic form it is the availability of suitable abiotic environment that provides the conditions for a distinct biotic community to exist. Importantly thought, the biotic community can greatly influence and even change the abiotic one.

- **Water:** Water is a chemical substance with the chemical formula H_2o. A water molecule contains one oxygen and two hydrogen atoms connected by covalent bonds. . Water on Earth moves continually through the water cycle of evaporation and transpiration. Evaporation and transpiration contribute to the precipitation over land. Water is a liquid at ambient conditions, but it often co-exists on Earth with its solid state, ice, and gaseous state. Water also exists in a liquid crystal state near hydrophilic surfaces.

- **Oxygen:** Oxygen (O) is a chemical element. In nature, oxygen is a gas with no color or smell. Oxygen is a very important element because it is a part of the air people breathe and the water people drink. Because of this, oxygen supports life. All living things need oxygen to live. Oxygen is a chemical element with symbol O and atomic number 8. It is a member of the chalcogen group on the periodic table.

- **Sunlight:** Sunlight, in the broad sense, is the total frequency spectrum of electromagnetic radiation given off by the Sun, particularly infrared, visible, and ultraviolet light. On Earth, sunlight is filtered through the Earth's atmosphere, and is obvious as daylight when the Sun is above the horizon. When the direct solar radiation is not blocked by clouds, it is experienced as sunshine, a combination of bright light and radiant heat. When it is blocked by the clouds or reflects off of other objects, it is experienced as diffused light.

- **Wind:** Wind is air that moves over the earth's surface. Wind is moving air. Wind can move so softly that it can hardly be felt. Or it may blow so hard and fast that it smashes over trees and buildings. Wind is often defined as the horizontal movement of air relative to the earth's surface. Wind is the flow of gases on a large scale. On the surface of the Earth, wind consists of the bulk movement of air. All winds, from gentle breezes to raging hurricanes, are caused by differences in the temperature of the atmosphere, by rotation of the Earth, and by unequal heating of the continents and the oceans. The sun heats the earth's surfaces unevenly. Air above hot areas expands and rises. Air from cooler areas then flows in to replace the heated air. This process is called circulation.

- **Carbon Dioxide:** Carbon dioxide (chemical formula CO2) is emitted in a number of ways. It is emitted naturally through the carbon cycle and through human activities like the burning of fossil fuels. Carbon dioxide (CO_2) is a naturally occurring chemical compound composed of 2 oxygen atoms each covalently double bonded to a single carbon atom. Natural sources of CO2 occur within the carbon cycle where billions of tons of atmospheric CO2 are removed from the atmosphere by oceans and growing plants, also known as 'sinks,' and are emitted back into the atmosphere annually through natural processes also known as 'sources.' When in balance, the total carbon dioxide emissions and removals from the entire carbon cycle are roughly equal

1.9   CHECK YOUR PROGRESS - 2

1.9.1 Fill In The Blanks:

(a) If a single factor is changed, perhaps by _____ or natural phenomenon, the whole system could be altered

(b) Abiotic factors are essentially _____ that effect the living organisms of the fresh water community

(c) Water also exists in a liquid crystal state near _____ s surfaces.

(d) Wind is often defined as the _____ of air relative to the earth's surface.

(e) Abiotic components are aspects of _____ and they can also be recognised as abiotic pathogens.

1.9.2 State Whether True or False:

(a) Chemical and geological factors are referred to as biotic components.

(b) Wind can move so softly that it can hardly be felt.

(c) There is no significant difference in access to water as well as humidity between temperate rainforests and deserts.

(d) When an ecosystem is barren and unoccupied, new organisms colonising the environment rely on favourable environmental.

(e) Carbon dioxide is emitted naturally through the carbon cycle.

1.10   BIOTIC COMPONENTS OF ENVIRONMENT:

The living components of an ecosystem are known as the "biotic factors" - living biological factors that influence the other organisms or environment of an ecosystem.

* Biotic components are the living things that shape an ecosystem. A biotic factor is any living component that affects another organism, including animals that consume the organism in question, and the living food that the organism consumes. Each biotic factor needs energy to do work and food for proper growth. Biotic factors include human influence.

* Biotic components are contrasted to abiotic components, which are non-living components of an organism's environment, such as temperature, light, moisture, air currents, etc. Remember the abiotic factors by SWATS. Soil, Water, Air, Temperature, and Sunlight.

* This is a lot more than just listing the plants, animals or micro-organisms found in an ecosystem. It includes the roles played by the organisms.

* Biotic factors interact as: Producers, consumers, detrivores, decomposers, parasite, host, predator, competitor, herbivore, symbiant and pathogen (Biotic Components, n.d.).

1.10.1   The Impact of Changing Factors:

If a single factor is changed, perhaps by pollution or natural phenomenon, the whole system could be altered. For example, humans can alter environments through farming or irrigation. While we usually cannot see what we are doing to various ecosystems, the impact is being felt all over. For example, acid rain in certain regions has resulted in the decline of fish population.

* In ecosystems, biotic factors are all living organisms and the waste that they produce. This refers to large life-forms such as trees or mammals, small life-forms such as insects and algae, and microscopic life-forms such as bacteria. These are the most diverse and easily changeable parts of ecosystems, subject to the balance of food chains and influenced by disease, pollution and abiotic conditions.

- Biotic factors are all organisms in an ecological setting. Things that are considered alive are biotic factors when studying the cycles of ecosystems and how environments function as a whole. This refers to animals, plants, trees and any materials they directly produce such as waste or falling leaves. The nonliving materials in an ecosystem, such as minerals, gases, liquids and chemicals are referred to as abiotic or non-biotic factors. In some ecosystems, such as jungles, the number of biotic factors is very high while the abiotic factors are relatively simple. In other places like deserts the abiotic factors are predominant and there are few biotic factors, which are all the more valuable because of the scarcity.

- Plants and animals that feed on them are the largest biotic factors in ecosystems. Plants can be as small as grass or as large as trees, depending on the area, and many different types of animals live on them. Animals that in turn feed on these animals are even larger, such as hawks, wolves and lions. While these are the most noticeable biotic parts of the ecosystem, they are often the lowest in number, smaller biotics being much more prevalent. These large biotics produce much of the waste that is also considered biotic materials, from leaves to dead bodies.

- Small biotics are the smaller organisms in an ecosystem, many of which feed on the waste or living material of the larger biotics. These include lichens, algae, worms and insects, many of which provide an integral food source for the larger predators, including birds and small mammals. These biotics do not produce as much waste as the large animals or trees.

- Although by far the smallest biotics, the microscopic organisms are some of the most important. Plankton, viruses and bacteria are all vital microscopic biotic organism. Bacteria can either be helpful, breaking down dead organisms into nutritious matter and helping larger organisms digest food, or harmful, spreading infections. Plankton is a vital resource in ocean ecosystem, and viruses have a tremendous impact on the health of environments, although negative.

- Both biotic and abiotic conditions can affect how an ecosystem thrives. Abiotic factors such as light intensity or what kind of soil is present directly affect biotic systems, but also rarely change. Biotic changes can occur more easily and threaten an ecosystem more completely. A disease or unbalance of predators can change one link of the food

chain, which will in turn affect all life forms. Abiotic factors are generally changed only by outside interference, such as pollution.

1.11   DIFFERENT BIOTIC FACTORS ON EARTH:

Biotic components generally include the following factors:

      1.11.1 Producers

      1.11.2 Consumer

      1.11.3 Secondary Consumer

      1.11.4 Decomposers

1.11.1   Producers:

The rain forest grows in three levels, the Canopy, which is the tallest level it has trees between 100 and 200 feet tall. The second level called the understory contains a mix of shrubs, ferns, palms, small trees and vines. The third and lowest level is the Forest floor where herbs, mosses and fungi grow. A producer is an organism that makes its own food from light energy or chemical energy. Most green plants that are one-celled organisms like slime molds and bacteria are producers. Producers are the base of the food chain. Here is a list of producers:

- Bamboo
- Banana Trees
- Rubber Trees
- Cassava
- Bromeliads

1.11.2   Consumer:

A consumer is a living thing that eats other living things to stay alive. It cannot make its own food like a producer but relies on producers for their source of food. There are more primary consumers then secondary consumers. Here is a list of primary consumers:

- Colobus Monkey
- Sloth
- Most bats
- Humming birds
- Bees
- Wasps
- Lemurs

1.11.3   Secondary Consumers:

Predators in the tropical rain forest use skill, force, poisons and traps to kill their prey. Since the tropical Rain Forest has over 15 million different species of both plants and animals, and also being more primary consumers, means the secondary consumers can find food very easily. These Predators have very unique adaptations, for example the Orb-Weaving Spider found along the coast has a web so thick and strong, the web can take down a normal sized bird. Also the Boa constrictor can strangle a human. These adaptations help these secondary consumers able to hunt and survive in the forest. Here is a list of Secondary Consumers:

- Anteater
- Spiders
- Scorpions

1.11.4   Decomposers:

They may look like they don't do a thing but decomposers are the most important kind of species. Without decomposers the tropical rain forest would be piled high with branches, rotting trees decaying fruits. All of the decomposers team up and work together to decompose plant matter.

In six weeks all of the litter would be composed, the tropical rain forest biome has the fasting working decomposers out of all other biomes. For example to decompose a log you would have termites eating it so eventually there would not be any fallen branches on the ground to rot, or any organic litter.

1.12   CHECK YOUR PROGRESS - 3

1.12.1 Fill in the Blanks:

(a) Remember the abiotic factors by _____.

(b) Both biotic and abiotic conditions can affect how a _____ thrives.

(c) Plankton, viruses and bacteria are all vital_____ biotic organism.

(d) Without _____ the Tropical Rain Forest would be piled high with branches, rotting trees decaying fruits.

(d) These adaptations help these_____ able to hunt and survive in the forest.

1.12.2 Answer The Following Questions In Brief:

(a) What do you mean by biotic factors?

_____

_____

_____

(b) What are the different components of biotic factors?

_____

_____

_____

1.13 SUMMARY:

In this unit we have discussed the meaning of ecology and environment and also discussed the differences between ecology and environment. Ecology is the study of the household of nature. Thus ecology does not only encompass the plants and animals but organism such as Bacteria Archaea and protozoa, as well. Whereas Environment refers to the sum total of conditions which surround a man at a given point in space and time, biotic and abiotic factors are the components of environment which are interrelated. If one factor is changed or removed, it impacts the availability of other resources within the system. Biotic and abiotic factors combine to create a system or more precisely, an ecosystem.

1.14 GLOSSARY:

- **Ecosystem-** All the communities/living organisms/ biotic factors and environmental / abiotic factors in a particular area; these factors are interacting and interdependent; they make up a self-contained system which is self supporting in terms of energy flow.
- **Environment**- All the factors in a habitat which affect an organism; these may be either living (biotic) or non living (abiotic).
- **Community**-All the organisms in a particular habitat at one time.
- **Food Chain**- A sequence of organisms in an ecosystem in which each is the food of the next organism in the sequence. Arrows represent energy flow through the chain.
- **Producer-** The first organism in a food chain; an autotroph (i.e capable of manufacturing organic molecules / food, normally by photosynthesis (thus, normally a plant).
- **Secondary Consumer**- Consumes/ obtain energy from the primary consumer; (thus a carnivore)

- **Primary Consumer**- The second organism in a food chain (in the second trophical level); consumer/ obtain energy from the producer; (thus an herbivore).
- **Population**- All the members of one species in a habitat at one time
- **Species**- A group of potentially interbreeding individuals; which do not normally interbreed with other groups/species to produce viable, fertile offspring.
- **Trophic Level**- A feeding level in a food web - defined by the method of obtaining food; all the organisms in a particular trophic level are the same number of energy transfers away from the producers.

1.15 ANSWERS TO CHECK YOUR PROGRESS 1, 2 AND 3:

1.5.1 Fill in the Blanks:
(a) German
(b) Nature
(c) E. P. Odum
(d) Environmentalists
(e) Surrounding

1.9.1 Fill in the Blanks:
(a) Pollution
(b) Nonliving components
(c) Hydrophilic
(d) Horizontal movement
(e) Geodiversity

1.9.2 State Whether True or False:
(a) False
(b) True
(a) False
(d) True
(e) True

1.12.1 Fill in the Blanks:
(a) SWATS
(b) Ecosystem
(c) Microscopic
(d) Decomposers
(e) Secondary consumers

1.12.2 Answer The Following Questions In Brief:

(a) The living components of an ecosystem are known as the "biotic factors" - living biological factors that influence the other organisms or environment of an ecosystem.

(b) Different components of biotic factors are:

1. Producers
2. Consumer
3. Secondary Consumer
4. Decomposers

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- Sciencebitz.com

1.17 SUGGESTED READINGS:

- Ecology and Environment   P.D. Sharma
- Environment and Ecology   ByArihant Expert
- Ecology and Environment   Dr. A.K. Tripathi
- Environment and Ecology   R. Rajagopalan
- Ecology and Environment   Aldo Leopold

1.18 TERMINAL QUESTIONS:

Q1. Define Ecology and discuss the differences between Ecology and Environment.

Q2. What are the biotic components of environment? Discuss biotic components in detail.

Q3. Define abiotic components and explain the various factors of abiotic components?

UNIT2: GROWING ECOLOGICAL AND ENVIRONMENTAL THREATS – GREEN HOUSE EFFECT, DEPLETION OF OZONE LAYER, ACID RAIN, RADIO-ACTIVE RADIATIONS, POLLUTION AND LOSS OF BIO-DIVERSITY ETC

STRUCTURE:

2.1   Introduction

2.2   Objectives

2.3   Green House Effect

2.4   Check Your Progress – 1

2.5   Depletion of Ozone Layer

2.6   Consequences of Ozone Layer Depletion

2.7   Check Your Progress – 2

2.8   Acid Rain

2.9   Effects of Acid Rain

2.10   Check Your Progress –3

2.11   Radio-Active Radiations

2.12   Pollution

2.13   Loss of Bio-Diversity

2.14   Check your Progress- 4

2.15   Summary

2.16   Glossary

2.17   Answer to Check Your Progress

2.18   References

2.19   Suggested Readings

2.20   Terminal Questions

2.1 INTRODUCTION:

In the previous chapter, you have learnt about ecology and environment, and how ecology can be differentiated by environment, Further you have learnt about abiotic and biotic Components of environment of ecology and factors of biotic and abiotic components on earth in detail.

In the present chapter we will be discussing about growing ecological threat and environmental threat that have adverse effect on living organism and environment effluents, emissions, wastes, resource depletion, etc., arising out of an organization's activities. The major threats of environment and ecology will be discussed in detail like Green House Effect, Depletion of Ozone Layer, Acid Rain, Radio-active Radiations, Pollution and Loss of Bio-diversity

2.2 OBJECTIVES:

After studying this unit, you will be able to:

- Understand about Ecological and Environmental Threats,
- Explain green house effect,
- Describe Depletion of Ozone Layer,
- Understand Acid Rain,
- Understand Radio-active Radiations,
- Explain Pollution and
- Describe Loss of Bio-diversity.

2.3 GREEN HOUSE EFFECT:

2.3.1 Meaning:

There are two common meanings of the term "greenhouse effect". There is a "natural" greenhouse effect that keeps the Earth's climate warm and habitable. There is also the "man-made" greenhouse effect, which is the enhancement of Earth's natural greenhouse effect by the addition of greenhouse gases from the burning of fossil fuels (mainly petroleum, coal, and natural gas).

In order to understand how the greenhouse effect operates, we need to first understand "infrared radiation". Greenhouse gases reduce the rate at which the Earth's surface loses infrared radiation to outer space. Because one way to increase the temperature of anything is to reduce its rate of energy loss to its surroundings, this makes the Earth's surface and lower atmosphere warmer than they would otherwise be.

You can think of greenhouse gases as sort of a "blanket" for infrared radiation - they keep the Earth's surface and lower layers of the atmosphere warmer, and the upper layers colder, than if the greenhouse gases were not there.

About 80-90% of the Earth's natural greenhouse effect is due to water vapor and clouds. Most of the rest is due to carbon dioxide, methane, and a few other minor gases. While the remaining gases in the atmosphere (e.g. nitrogen, oxygen) also absorb and emit a small amount of infrared radiation, their radiative effect on temperature is so weak that they can be neglected. While methane is a much more potent greenhouse gas than carbon dioxide, there is far less of it in the atmosphere.

It is the carbon dioxide concentration that is increasing, due to the burning of fossil fuels (as well as from some rainforest burning). Compared to a pre-industrial atmospheric concentration of around 270 parts per million, the average concentration has increased to close to 400 ppm in 2012. This causes the man-made portion of the greenhouse effect, and it is believed by many scientists to be responsible for the global warming of the last 50 years or more.

Also, the concentration of methane, although extremely small (measured in parts per billion), has also increased in recent decades contributing somewhat to the strengthening of the greenhouse effect. The reasons for this increase, though, remain uncertain (What is the greenhouse....).

Since there is considerable misunderstanding and misconceptions regarding the greenhouse effect, it is useful to list a few of the things the greenhouse effect is not:

1) The greenhouse effect does not operate like a greenhouse that plants are grown in. Plant greenhouses stay warm because they are enclosed, preventing warm air from escaping. In the open atmosphere, warm air that builds up at the surface rises ("convects") and mixes with air from higher altitudes, limiting warming near the surface. The atmospheric greenhouse effect is radioactive, not convective.

2) The greenhouse effect does not require solar radiation (sunlight) to operate. The greenhouse effect would still exist if there was no sun, and the climate system was instead warmed from below by geothermal energy.

3) The greenhouse effect cannot be demonstrated with a jar or other enclosure because there is too little greenhouse gas involved.

Thousands of feet of atmospheric depth are required for the greenhouse effect to have a measurable effect on temperature uncertain (What is the greenhouse....).

The greenhouse effect is entirely due to the fact that the atmosphere absorbs and emits infrared energy, combined with a heat source to warm the bottom of the atmosphere (in our case, the Sun) and the cold depths of outer space above the top of the atmosphere. The greenhouse gases (and clouds) reduce the ability of the Earth's surface to cool, thus raising its temperature above what it would be without those greenhouse gases.

The greenhouse effect refers to circumstances where the short wavelengths of visible light from the sun pass through a transparent medium and are absorbed, but the longer wavelengths of the infrared re-radiation from the heated objects are unable to pass through that medium. The trapping of the long wavelength radiation leads to more heating and a higher resultant temperature. Besides the heating of an automobile by sunlight through the windshield and the namesake example of heating the greenhouse by sunlight passing through sealed, transparent windows, the greenhouse effect has been widely used to describe the trapping of excess heat by the rising concentration of carbon dioxide in the atmosphere. The carbon dioxide strongly absorbs infrared and does not allow as much of it to escape into space.

Major part of the efficiency of the heating of an actual greenhouse is the trapping of the air so that the energy is not lost by convection. Keeping the hot air from escaping out the top is part of the practical "greenhouse effect", but it is common usage to refer to the infrared trapping as the "greenhouse effect" in atmospheric applications where the air trapping is not applicable.

2.3.2 Examples of Greenhouse Effect:

Bright sunlight will effectively warm your car on a cold, clear day by the greenhouse effect. The longer infrared wavelengths radiated by sun-warmed objects do not pass readily through the glass. The entrapment of this energy warms the interior of the vehicle. The trapping of the hot air so that it cannot rise and lose the energy by convection also plays a major role. Short wavelengths of visible light are readily transmitted through the transparent windshield.

Shorter wavelengths of ultraviolet light are largely blocked by glass since they have greater quantum energies which have absorption

mechanisms in the glass. Even though you may be uncomfortably warm with bright sunlight streaming through, you will not be sunburned.

Increase in Greenhouse Gases:

The increase in the concentration of carbon dioxide, one of the three major atmospheric contributors to the greenhouse effect has been carefully documented at the Mauna Loa Observatory in Hawaii. The 1990 rate of increase was about 0.4% per year. The interesting cyclic variations represent the reduction in carbon dioxide by photosynthesis during the growing season in the northern hemisphere.

Current analysis suggests that the combustion of fossil fuels is a major contributor to the increase in the carbon dioxide concentration, such contributions being 2 to 5 times the effect of deforestation.

2.3.3 Contributors to Greenhouse Effect:

Those gas molecules in the Earth's atmosphere with three or more atoms are called "greenhouse gases" because they can capture outgoing infrared energy from the Earth, thereby warming the planet. The greenhouse gases include water vapor with three atoms (H_2O), ozone (O_3), carbon dioxide (CO_2), and methane (CH_4). Also, trace quantities of chlorofluoro-carbons (CFC's) can have a disproportionately large effect.

The methane concentration is much less at 1.65 ppm, but it is 20 to 30 times as effective as an IR absorber.

Carbon dioxide has the largest concentration at 360 ppm.

Approximate importance to greenhouse effect.

Chlorofluorocarbons have a concentration of only about 10-20 ppt, but they are some 10,000 times as effective at absorbing IR.

Analysis data from Kraushaar and Ristinen, Energy and Problems of a Technical Society.

circa 1990

To attempt to quantify the effects of greenhouse gases on the global temperature, climatologists use the "radiative forcing" of the current atmospheric content of these gases.

2.4 CHECK YOUR PROGRESS – 1

2.4.1 Answer The Following Questions In Brief:

(a) Explain the meaning of green house effect?

_____

_____

(b) What is the main reason of green house effect?

_____

_____

2.4.2 State Whether True Or False:

(a) There is only one common meanings of the term "greenhouse effect".

(b) Greenhouse gases keep the Earth's surface and lower layers of the atmosphere warmer, and the upper layers colder,

(c) The greenhouse gases include water vapor with two atoms (H_2O), ozone (O_3), carbon dioxide (CO_2),

(d) The greenhouse effect would still exist if there was no sun, and the climate system was instead warmed from below by geothermal energy.

(e) There is also the "man-made" greenhouse effect, which is the enhancement of Earth's natural greenhouse effect

2.5 DEPLETION OF OZONE LAYER:

The ozone layer protects the Earth from the ultraviolet rays sent down by the sun. If the ozone layer is depleted by human action, the effects on the planet could be catastrophic. Ozone is present in the stratosphere. The stratosphere reaches 30 miles above the Earth, and at the very top it contains ozone. The sun rays are absorbed by the ozone in the stratosphere and thus do not reach the Earth.

Ozone is a bluish gas that is formed by three atoms of oxygen. The form of oxygen that humans breathe in consists of two oxygen atoms, O_2. When found on the surface of the planet, ozone is considered a dangerous pollutant and is one substance responsible for producing the greenhouse effect. The highest regions of the stratosphere contain about 90% of all ozone.

The fact that the ozone layer was being depleted was discovered in the mid-1980s. The main cause of this is the release of CFCs, (chlorofluorocarbons). Ozone depletion describes two distinct but related phenomena observed since the late 1970s: a steady decline of about 4% per decade in the total volume of ozone in Earth's stratosphere (the ozone layer), and a much larger springtime decrease in stratospheric ozone over

Earth's polar regions. The latter phenomenon is referred to as the ozone hole. In addition to these well-known stratospheric phenomena, there are also springtime polar tropospheric ozone depletion events.

2.5.1 Meaning of Ozone Layer Depletion:

Ozone layer depletion, is simply the wearing out (reduction) of the amount of ozone in the stratosphere. Unlike pollution, which has many types and causes, Ozone depletion has been pinned down to one major human activity.

Industries that manufacture things like insulating foams, solvents, soaps, cooling things like Air Conditioners, Refrigerators and 'Take-Away' containers use something called chlorofluorocarbons (CFCs). These substances are heavier than air, but over time, (2-5years) they are carried high into the stratosphere by wind action. Depletion begins when CFC's get into the stratosphere. Ultra violet radiation from the sun breaks up these CFCs. The breaking up action releases Chlorine atoms. Chlorine atoms react with Ozone, starting a chemical cycle that destroys the good ozone in that area. One chlorine atom can break apart more than 100,000 ozone molecules.

2.5.2 Interest in Ozone Layer Depletion:

While the effect of the Antarctic ozone hole in decreasing the global ozone is relatively small, estimated at about 5% per decade, the hole has generated a great deal of interest because:

- The decrease in the ozone layer was predicted in the early 1980s to be roughly 7% over a 60-year period.
- The sudden recognition in 1985 that there was a substantial "hole" was widely reported in the press. The especially rapid ozone depletion in Antarctica had previously been dismissed as a measurement error.
- Many of those unsure about what the ozone hole was and what caused it were worried that ozone holes might start appearing over other areas of the globe, but to date the only other large-scale depletion is a smaller ozone "dimple" observed during the Arctic spring over the North Pole. Ozone at middle latitudes has declined, but by a much smaller extent (about 4–5% decrease).
- If the conditions become more severe (cooler stratospheric temperatures, more stratospheric clouds, more active chlorine), global ozone may decrease at a much greater pace. Standard global warming theory predicts that the stratosphere will cool.

- When the Antarctic ozone hole breaks up, the ozone-depleted air drifts out into nearby areas. Decreases in the ozone level of up to 10% have been reported in New Zealand in the month following the breakup of the Antarctic ozone hole (Ozone Depletion, n.d.).

2.6 CONSEQUENCES OF OZONE LAYER DEPLETION:

Since the ozone layer absorbs Ultraviolet B (UVB) ultraviolet light from the sun, ozone layer depletion is expected to increase surface UVB levels, which could lead to damage, including increase in skin cancer. This was the reason for the Montreal Protocol. Although decreases in stratospheric ozone are well-tied to CFCs and there are good theoretical reasons to believe that decreases in ozone will lead to increases in surface UVB, there is no direct observational evidence linking ozone depletion to higher incidence of skin cancer and eye damage in human beings. This is partly because UVA, which has also been implicated in some forms of skin cancer, is not absorbed by ozone, and it is nearly impossible to control statistics for lifestyle changes in the populace.

2.6.1 Increased UV:

Ozone, while a minority constituent in Earth's atmosphere, is responsible for most of the absorption of UVB radiation. The amount of UVB radiation that penetrates through the ozone layer decreases exponentially with the slant-path thickness and density of the layer. Correspondingly, a decrease in atmospheric ozone is expected to give rise to significantly increased levels of UVB near the surface. Ozone-driven phenolic formation in tree rings has dated the start of ozone depletion in northern latitudes to the late 1700s.

Increases in surface UVB due to the ozone hole can be partially inferred by radiative transfer model calculations, but cannot be calculated from direct measurements because of the lack of reliable historical (pre-ozone-hole) surface UV data, although more recent surface UV observation measurement programmes exist (e.g. at Lauder, New Zealand).

2.6.2 Biological Effects:

The main public concern regarding the ozone hole has been the effects of increased surface UV radiation on human health. So far, ozone depletion in most locations has been typically a few percent and, as noted above, no direct evidence of health damage is available in most latitudes. Were the high levels of depletion seen in the ozone hole ever to be common across the globe, the effects could be substantially more

dramatic. As the ozone hole over Antarctica has in some instances grown so large as to reach southern parts of Australia, New Zealand, Chile, Argentina, and South Africa, environmentalists have been concerned that the increase in surface UV could be significant.

Ozone depletion would change all of the effects of UV on human health, both positive and negative.UVB (the higher energy UV radiation absorbed by ozone) is generally accepted to be a contributory factor to skin cancer and to produce Vitamin D. In addition, increased surface UV leads to increased tropospheric ozone, which is a health risk to humans.

2.6.3 Basal and Squamous Cell Carcinomas:

The most common forms of skin cancer in humans, basal and squamous cell carcinomas have been strongly linked to UVB exposure. The mechanism by which UVB induces these cancers is well understood—absorption of UVB radiation causes the pyrimidine bases in the DNA molecule to form dimers, resulting in transcription errors when the DNA replicates. These cancers are relatively mild and rarely fatal, although the treatment of squamous cell carcinoma sometimes requires extensive reconstructive surgery. By combining epidemiological data with results of animal studies, scientists have estimated that a one percent decrease in stratospheric ozone would increase the incidence of these cancers by 2%.

2.6.4 Malignant Melanoma:

Another form of skin cancer, malignant melanoma, is much less common but far more dangerous, being lethal in about 15–20% of the cases diagnosed. The relationship between malignant melanoma and ultraviolet exposure is not yet well understood, but it appears that both UVB and UVA are involved. Experiments on fish suggest that 90 to 95% of malignant melanomas may be due to UVA and visible radiationwhereas experiments on opossums suggest a larger role for UVB. Because of this uncertainty, it is difficult to estimate the impact of ozone depletion on melanoma incidence.

2.6.5 Cortical Cataracts:

Studies are suggestive of an association between ocular cortical cataracts and UV-B exposure, using crude approximations of exposure and various cataract assessment techniques.

A detailed assessment of ocular exposure to UV-B was carried out in a study on Chesapeake Bay Watermen, where increases in average

annual ocular exposure were associated with increasing risk of cortical opacity. In this highly exposed group of predominantly white males, the evidence linking cortical opacities to sunlight exposure was the strongest to date.

However, subsequent data from a population-based study in Beaver Dam, WI suggested the risk may be confined to men. In the Beaver Dam study, the exposures among women were lower than exposures among men, and no association was seen. Moreover, there were no data linking sunlight exposure to risk of cataract in African Americans, although other eye diseases have different prevalences among the different racial groups, and cortical opacity appears to be higher in African Americans compared with whites.

2.6.6 Increased Tropospheric Ozone:

Increased surface UV leads to increased tropospheric ozone. Ground-level ozone is generally recognized to be a health risk, as ozone is toxic due to its strong oxidant properties. At this time, ozone at ground level is produced mainly by the action of UV radiation on combustion gases from vehicle exhausts.

2.6.7 Increased Production of Vitamin D:

Vitamin D is produced in the skin by ultraviolet light. Thus, higher UV-B exposure raises human vitamin D in those deficient in it. Recent research (primarily since the Montreal protocol), shows that many humans have less than optimal vitamin D levels. In particular, the lowest quartile of vitamin D (<17.8 ng/ml), in the US population were found using information from the National Health and Nutrition Examination Survey to be associated with an increase in all cause mortality in the general population. While higher levels of Vitamin D are associated with higher mortality, the body has mechanisms that prevent sunlight from producing too much Vitamin D.

2.6.8 Effects on Non-Human Animals:

A November 2010 report by scientists at the Institute of Zoology in London found that whales off the coast of California have shown a sharp rise in sun damage, and these scientists "fear that the thinning ozone layer is to blame".

The study photographed and took skin biopsies from over 150 whales in the Gulf of California and found "widespread evidence of epidermal damage commonly associated with acute and severe sunburn",

having cells that form when the DNA is damaged by UV radiation. The findings suggest "rising UV levels as a result of ozone depletion are to blame for the observed skin damage, in the same way that human skin cancer rates have been on the increase in recent decades."

2.6.9 Effects on Crops:

An increase of UV radiation would be expected to affect crops. A number of economically important species of plants, such as rice, depend on cyanobacteria residing on their roots for the retention of nitrogen. Cyanobacteria are sensitive to UV radiation and would be affected by its increase (Ozone Depletion, n.d.).

2.7 CHECK YOUR PROGRESS – 2

2.7.1 Fill in The Blanks:

(a) If the ozone layer is depleted by human action, the effects on the planet could be _____.

(b) An increase of _____would be expected to affect crops.

(c) When the _____hole breaks up, the ozone-depleted air drifts out into nearby areas

(d) Ozone layer absorbs _____from the sun, ozone layer depletion is expected to increase surface UVB levels

(e) Increased surface UV leads to increased_____, which is a health risk to humans.

2.7.2 State Whether True or False:

(a) Ozone depletion would change all of the effects of UV on human health negatively.

(b) There is no direct observational evidence linking ozone depletion to higher incidence of skin cancer and eye damage in human beings.

(c) The amount of UVB radiation that penetrates through the ozone layer decreases exponentially with the slant-path thickness and density of the layer.

(d) The decrease in the ozone layer was predicted in the early 1980s to be roughly 9% over a 60-year period.

(e) Higher level of Vitamin D are associated with higher mortality, the body has mechanisms that prevent sunlight from producing too much Vitamin D.

2.8 ACID RAIN:

"Acid rain" is a broad term referring to a mixture of wet and dry deposition (deposited material) from the atmosphere containing higher than normal amounts of nitric and sulfuric acids. The precursors, or chemical forerunners, of acid rain formation result from both natural sources, such as volcanoes and decaying vegetation, and man-made sources, primarily emissions of sulfur dioxide (SO_2) and nitrogen oxides (NO_x) resulting from fossil fuel combustion. In the United States, roughly 2/3 of all SO_2 and 1/4 of all NO_x come from electric power generation that relies on burning fossil fuels, like coal. Acid rain occurs when these gases react in the atmosphere with water, oxygen, and other chemicals to form various acidic compounds. The result is a mild solution of sulfuric acid and nitric acid. When sulfur dioxide and nitrogen oxides are released from power plants and other sources, prevailing winds blow these compounds across state and national borders, sometimes over hundreds of miles

- **Wet Deposition:** Wet deposition refers to acidic rain, fog, and snow. If the acid chemicals in the air are blown into areas where the weather is wet, the acids can fall to the ground in the form of rain, snow, fog, or mist. As this acidic water flows over and through the ground, it affects a variety of plants and animals. The strength of the effects depends on several factors, including how acidic the water is; the chemistry and buffering capacity of the soils involved; and the types of fish, trees, and other living things that rely on the water.

- **Dry Deposition:** In areas where the weather is dry, the acid chemicals may become incorporated into dust or smoke and fall to the ground through dry deposition, sticking to the ground, buildings, homes, cars, and trees. Dry deposited gases and particles can be washed from these surfaces by rainstorms, leading to increased runoff. This runoff water makes the resulting mixture more acidic. About half of the acidity in the atmosphere falls back to earth through dry.

Prevailing winds blow the compounds that cause both wet and dry acid deposition across state and national borders, and sometimes over hundreds of miles. Scientists discovered, and have confirmed, that sulfur dioxide (SO2) and nitrogen oxides (NOx) are the primary causes of acid rain.

In the US, About 2/3 of all SO2 and 1/4 of all NOx comes from electric power generation that relies on burning fossil fuels like coal. Acid rain occurs when these gases react in the atmosphere with water, oxygen, and other chemicals to form various acidic compounds. Sunlight increases

the rate of most of these reactions. The result is a mild solution of sulfuric acid and nitric acid (What is acid rain, n.d.).

2.8.1 Measurement of Acid Rain:

Acid rain is measured using a scale called "pH." The lower a substance's pH, the more acidic it is. Pure water has a pH of 7.0. Normal rain is slightly acidic because carbon dioxide dissolves into it, so it has a pH of about 5.5. As of the year 2000, the most acidic rain falling in the US has a pH of about 4.3.

Acid rain's pH, and the chemicals that cause acid rain, are monitored by two networks, both supported by EPA. The National Atmospheric Deposition Program measures wet deposition, and its Web site features maps of rainfall pH and other important precipitation chemistry measurements.

2.9 EFFECTS OF ACID RAIN:

Acid rain causes acidification of lakes and streams and contributes to damage of trees at high elevations (for example, red spruce trees above 2,000 feet) and many sensitive forest soils. In addition, acid rain accelerates the decay of building materials and paints, including irreplaceable buildings, statues, and sculptures that are part of our nation's cultural heritage. Prior to falling to the earth, SO2 and NOx gases and their particulate matter derivatives, sulfates and nitrates, contribute to visibility degradation and harm public health.

* **Materials**: These effects significantly reduce the societal value of buildings, bridges, cultural objects (such as statues, monuments, and tombstones), and cars.

  Dry deposition of acidic compounds can also dirty buildings and other structures, leading to increased maintenance costs. To reduce damage to automotive paint caused by acid rain and acidic dry deposition, some manufacturers use acid-resistant paints, at an average cost of $5 for each new vehicle (or a total of $61 million per year for all new cars and trucks sold in the U.S.). EPA's Acid Rain Program will reduce damage to materials by limiting SO_2 emissions. The benefits of EPA's Acid Rain Program are measured, in part, by the costs now paid to repair or prevent damage—the costs of repairing buildings and bridges, using acid-resistant paints on new vehicles, plus the value that society places on the details of a statue lost forever to acid rain.

- **Surface Waters and Aquatic Animals**: The ecological effects of acid rain are most clearly seen in the aquatic or water environments, such as streams, lakes, and marshes. Acid rain flows into streams, lakes, and marshes after falling on forests, fields, buildings, and roads. Acid rain also falls directly on aquatic habitats. Most lakes and streams have a pH between 6 and 8, although some lakes are naturally acidic even without the effects of acid rain.

  Acid rain primarily affects sensitive bodies of water, which are located in watersheds whose soils have a limited ability to neutralize acidic compounds (called "buffering capacity"). Lakes and streams become acidic (i.e., the pH value goes down) when the water itself and its surrounding soil cannot buffer the acid rain enough to neutralize it. In areas where buffering capacity is low, acid rain releases aluminum from soils into lakes and streams; aluminum is highly toxic to many species of aquatic organisms

- **Human Health:** Acid rain looks, feels, and tastes just like clean rain. The harm to people from acid rain is not direct. Walking in acid rain, or even swimming in an acid lake, is no more dangerous than walking or swimming in clean water. However, the pollutants that cause acid rain—sulfur dioxide (SO_2) and nitrogen oxides (NO_x)—do damage human health. These gases interact in the atmosphere to form fine sulfate and nitrate particles that can be transported long distances by winds and inhaled deep into people's lungs. Fine particles can also penetrate indoors. Many scientific studies have identified a relationship between elevated levels of fine particles and increased illness and premature death from heart and lung disorders, such as asthma and bronchitis.

  Based on health concerns, SO_2 and NO_x have historically been regulated under the Clean Air Act, including the Acid Rain Program. In the eastern U.S., sulfate aerosols make up about 25 percent of fine particles. By lowering SO_2 and NO_x emissions from power generation, the Acid Rain Program will reduce the levels of fine sulfate and nitrate particles and so reduce the incidence and the severity of these health problems.

- **Forests**: A spring shower in the forest washes leaves and falls through the trees to the forest floor below. Some trickles over the ground and runs into streams, rivers, or lakes, and some of the water soaks into the soil. That soil may neutralize some or all of the acidity of the acid rainwater. This ability is called buffering capacity, and without it, soils become more acidic. Differences in soil buffering capacity are an

important reason why some areas that receive acid rain show a lot of damage, while other areas that receive about the same amount of acid rain do not appear to be harmed at all. The ability of forest soils to resist, or buffer, acidity depends on the thickness and composition of the soil, as well as the type of bedrock beneath the forest floor. Midwestern states like Nebraska and Indiana have soils that are well buffered. Places in the mountainous northeast, like New York's Adirondack and Catskill Mountains, have thin soils with low buffering capacity.

- **Automotive Coatings***:* Over the past two decades, there have been numerous reports of damage to automotive paints and other coatings. The reported damage typically occurs on horizontal surfaces and appears as irregularly shaped, permanently etched areas. The damage can best be detected under fluorescent lamps, can be most easily observed on dark colored vehicles, and appears to occur after evaporation of a moisture droplet. In addition, some evidence suggests damage occurs most frequently on freshly painted vehicles. Usually the damage is permanent; once it has occurred, the only solution is to repaint. The results of laboratory experiments and at least one field study have demonstrated that acid rain can scar automotive coatings. Furthermore, chemical analyses of the damaged areas of some exposed test panels indicate elevated levels of sulfate, implicating acid rain (Effects of acid..., n.d.).

2.10 CHECK YOUR PROGRESS – 3

2.10.1 Fill In The Blanks:

(a) Acid rain occurs when these gases react in the _____with water, oxygen, and other chemicals to form various acidic compounds.

(b) As this _____flows over and through the ground, it affects a variety of plants and animals.

(c) Acid rain is measured using a scale called _____.

(d) Chemical analyses of the _____of some exposed test panels indicate elevated levels of sulfate, implicating acid rain.

(e) Dry deposition of _____can also dirty buildings and other structures, leading to increased maintenance costs.

(f) Acid rain releases _____from soils into lakes and streams.

2.11 RADIO-ACTIVE RADIATION:

Radiation is energy that travels in the form of waves or high speed particles. Radiation is a process in which energetic particles or energetic

waves travel through a vacuum, or through matter-containing media that are not required for their propagation. Waves of a mass filled medium itself, such as water waves or sound waves, are usually not considered to be forms of "radiation" in this sense.

Radiation can be classified as either ionizing or non-ionizing. The word radiation is often colloquially used in reference to ionizing radiation (e.g. x-rays, gamma rays), but the term radiation may correctly also refer to non-ionizing radiation (e.g., radio waves, heat or visible light) as well. The particles or waves radiate (i.e., travel outward in all directions) from a source. This aspect leads to a system of measurements and physical units that are applicable to all types of radiation. Because radiation expands as it passes through space, and as its energy is conserved (in vacuum), the power of all types of radiation follows an inverse-square law in relation to the distance from its source (Radiation, n.d.).

Both ionizing and non-ionizing radiation can be harmful to organisms and can result in changes to the natural environment. In general, however, ionizing radiation is far more harmful to living organisms per unit of energy deposited than non-ionizing radiation, since the ions that are produced, even at low radiation powers, have the potential to cause DNA damage. By contrast, most non-ionizing radiation is harmful to organisms only in proportion to the thermal energy deposited, and is conventionally considered harmless at low powers that do not produce a significant temperature rise.

Ultraviolet radiation in some aspects occupies a middle ground, as it has some features of both ionizing and non-ionizing radiation. Although nearly the entire ultraviolet spectrum that penetrates the Earth's atmosphere is non-ionizing, this radiation does far more damage to many molecules in biological systems than can be accounted for by heating effects (an example is sunburn). These properties derive from ultraviolet's power to alter chemical bonds, even without having quite enough energy to ionize atoms (Radiation, n.d.).

2.12 POLLUTION:

Every year in the U.S. factories release over 3 million tons of toxic chemicals into the land, air and water. This hazardous waste causes us to lose over 15 million acres of land every year, it leads to respiratory complications and other health problems and it makes our rivers and lakes too polluted for us to swim in and drink.

But factories are only part of the problem of pollution. Pollution is caused by industrial and commercial waste, agriculture practices, everyday human activities and most notably, modes of transportation. No matter where you go and what you do, there are remnants of pollution.

2.12.1 Definition of Pollution:

Pollution is the introduction of contaminants into the natural environment that causes adverse change. Pollution can take the form of chemical substances or energy, such as noise, heat or light. Pollutants, the components of pollution, can be either foreign substances/energies or naturally occurring contaminants. Pollution is often classed as point source or nonpoint source pollution.

Pollution is the introduction of a contaminant into the environment. It is created mostly by human actions, but can also be a result of natural disasters. Pollution has a detrimental effect on any living organism in an environment, making it virtually impossible to sustain life (Pollution, n.d.).

2.12.2 Types of Pollution:

Pollution harms the Earth's environment and its inhabitants in many ways. The three main types of pollution are:

2.12.2.1 Land Pollution:

Land pollution is pollution of the Earth's natural land surface by industrial, commercial, domestic and agricultural activities.

- **Sources Of Land Pollution:** Some of the main contributors to land pollution are:Chemical and nuclear plants**,** Industrial factories**,** Oil refineries**,** Human sewage**,** Oil and antifreeze leaking from cars**,** Mining**,** Littering**,** Overcrowded landfills**,** Deforestation**,** Construction debris.
- **Facts about Land Pollution**: Here are a few facts about land pollution:
  - ➢ Every year one American produces over 3285 pounds of hazardous waste.
  - ➢ Land pollution causes us to lose 24 billion tons of top soil every year.
  - ➢ Americans generate 30 billion foam cups, 220 million tires and 1.8 billion disposable diapers every year.
  - ➢ We throw away enough trash every day to fill 63,000 garbage trucks.
  - ➢ Every day Americans throw away 1 million bushels of litter out their car window.
  - ➢ Over 80% of items in landfills can be recycled, but they're not.

How to Prevent Land Pollution:

The best way to prevent land pollution is to recycle. Here are a few other ways you can reduce land pollution:

  ➢ Reuse any items that you can.
  ➢ Buy biodegradable products.
  ➢ Store all liquid chemicals and waste in spill-proof containers.
  ➢ Eat organic foods that are grown without pesticides.
  ➢ Don't use pesticides.
  ➢ Use a drip tray to collect engine oil.
  ➢ Buy products that have little packaging.
  ➢ Don't dump motor oil on the ground.

2.12.2.2 Air Pollution:

Air pollution is the accumulation of hazardous substances into the atmosphere that danger human life and other living matter.

- **Sources Of Air Pollution**: Some of the main contributors to air pollution are: Automobile emissions, Tobacco smoke, Combustion of coal, Acid rain, Noise pollution from cars and construction, Power plants, Manufacturing buildings, Large ships, Paint fumes, Aerosol sprays, Wildfires, Nuclear weapons.

- **Facts about Air Pollution**: Here are a few facts about air pollution:
  ➢ Almost 232 million different types of vehicles are driven by U.S. citizens every day, adding greenhouse gases into the air.
  ➢ U.S. vehicle emissions contribute 45% to global warming.
  ➢ The average adult consumes 3,000 gallons of polluted air every day.
  ➢ Vehicle exhaust contributes to 60% of carbon monoxide emissions in the U.S. and up to 95% in large cities.
  ➢ Every year 335,000 Americans die of lung cancer, which is a direct result of air pollution?

How to Prevent Air Pollution:

The number one way to prevent air pollution is to walk or bike more and drive less. This will prevent fossil fuels from polluting the air. Here are some other ways to prevent air pollution:

  ➢ Carpool or join a ride share with friends and coworkers.
  ➢ Don't smoke.
  ➢ Keep your car maintenance up-to-date.
  ➢ If you have to drive, do your errands at one time.
  ➢ Don't buy products that come in aerosol spray cans.
  ➢ Avoid using lighter fluid when barbecuing outside.

➢ When you drive accelerates slowly and uses cruise control.
➢ Always replace your car's air filter.
➢ Use a push or electric lawnmower rather than a gas-powered one.
➢ Don't use harsh chemical cleaners that can emit fumes.
➢ Inspect your gas appliances and heaters regularly.

2.12.2.3 Water Pollution:

Water pollution is the introduction of chemical, biological and physical matter into large bodies of water that degrade the quality of life that lives in it and consumes it. Water pollution is the contamination of water bodies (e.g. lakes, rivers, oceans, aquifers and groundwater). Water pollution occurs when pollutants are directly or indirectly discharged into water bodies without adequate treatment to remove harmful compounds. Water pollution affects plants and organisms living in these bodies of water. In almost all cases the effect is damaging not only to individual species and populations, but also to the natural biological communities.

• **Sources of Water Pollution:** Some of the main contributors to water pollution are: Factories, Refineries, Waste treatment facilities, Mining, Pesticides, herbicides and fertilizers, Human sewage, Oil spills, failing septic systems, Soap from washing your car, Oil and antifreeze leaking from cars, Household chemicals and Animal waste.

• **Facts about Water Pollution:** Here are a few facts about water pollution:
➢ Over two-thirds of U.S. estuaries and bays are severely degraded because of nitrogen and phosphorous pollution.
➢ Every year almost 25% of U.S. beaches are closed at least once because of water pollution.
➢ Over 73 different kinds of pesticides have been found in the groundwater that we eventually use to drink.
➢ 1.2 trillion gallons of sewage, storm water and industrial waste are discharged into U.S. waters every year.
➢ 40% of U.S. Rivers are too polluted for aquatic life to survive.
➢ Americans use over 2.2 billion pounds of pesticides every year, which eventually washes into our rivers and lakes.

How to Prevent Water Pollution:

The best way to prevent water pollution is to not throw trash and other harmful chemicals into our water supplies. Here are a few more ways you can prevent water pollution:
➢ Wash your car far away from any storm water drains.

➢ Don't throw trash, chemicals or solvents into sewer drains.
➢ Inspect your septic system every 3-5 years.
➢ Avoid using pesticides and fertilizers that can run off into water systems.
➢ Sweep your driveway instead of hosing it down.
➢ Always pump your waste-holding tanks on your boat.
➢ Use non-toxic cleaning materials.
➢ Clean up oil and other liquid spills with kitty litter and sweet them up.
➢ Don't wash paint brushes in the sink (Pollution, n.d.).

2.13 LOSS OF BIO-DIVERSITY:

Biodiversity is the degree of variation of life. This can refer to genetic variation, species variation, or ecosystem variation within an area, biome, or planet. Terrestrial biodiversity tends to be highest at low latitudes near the equator, which seems to be the result of the warm climate and high primary productivity. Marine biodiversity tends to be highest along coasts in the Western Pacific, where sea surface temperature is highest and in mid-latitudinal band in all oceans. Biodiversity generally tends to cluster in hotspots, and has been increasing through time but will be likely to slow in the future.

The generic definition is: the number of species in an environment and the number of individuals in each species. To put it simply, it is the number of different species in one area and the quantity of each of these species.

Newer definitions include genetic variation within a species and variations between types of biological communities on the earth. Functional diversity is also now studied. This is an analysis of the biological functions performed by a specific ecosystem. This is useful in deter- mining the consequences of human impact on an area. However, this is difficult to measure; and it is highly possible that important functions of an ecosystem may be overlooked in this measurement due to our ignorance of the processes involved.

The functioning of the biosphere (or our entire planet) is dependent on the combination of all existing ecosystems. Our very existence depends on this process functioning properly. Every organism has its niche in the environment. Once it is gone, it may not be able to be replaced by any other organism. What does this mean for us as humans? A whole host of things.

2.13.1 Impact of Loss of Bio-diversity:

Loss of diversity in an ecosystem can cause environmental changes. Loss of one species may cause a chain reaction, resulting in a change to the ecosystem itself. As we do not know what each specific organism contributes to its environment, we cannot predict how the ecosystem will be affected. The whole ecosystem may be weakened by this process. The fewer animals left, the fewer we can see when we interact with nature. When a species is depleted so that there are only a few organisms left, the genetic diversity in the species becomes very low. This lowers the survival rate of the species. If all the individuals left are weak, have some form of abnormality, or are unable to survive in their environment, the species is doomed to extinction.

One species may be necessary for the survival of another species. If an animal or plant is the main or only food source for another, its extinction will cause a domino effect. Other species will die out after the original one is lost. The oceans of the world are much more stable than the land. Changes here usually take a long time. The organisms which live here have adapted to meet this slow, gradual change. They cannot tolerate drastic, abrupt changes.

• **Ecosystem Disruption**: Loss of diversity in an ecosystem can cause environmental changes. Loss of one species may cause a chain reaction, resulting in a change to the ecosystem itself. Every organism has its niche in the environment. Once it is gone, it may not be able to be replaced by any other organism. As we do not know what each specific organism contributes to its environment, we cannot predict how the ecosystem will be affected. The whole ecosystem may be weakened by this process.

• **Keystone Species:** There are certain species which are known as "keystone" species. These species have unusually important roles in their ecosystems. Fluctuation in their population can cause dramatic effects on the entire system. In kelp ecosystems such as those off the coast of California there is a complex relationship between three keystone species: the sea otter, the sea urchin, and the kelp itself. If any one of these organisms declines severely in population, the whole ecosystem is changed. The otters keep the urchin population in check. Without them, the urchins would devour the whole kelp forest. The kelp provides homes for many other organisms which would   suffer if it was destroyed. Yet, without sufficient sea urchins, the sea otter population would decline. It is a complex web which must be balanced properly for the system to thrive

• **Medicinal Benefits**: A second important consideration is that plants and animals produce defense mechanisms. These are often chemicals used to either repel predators or to aid in elimination of their competition. These chemicals are vitally important to humans because many cures for human diseases have been found in these compounds. If a species is lost due to our interference in its ecosystem, we also lose the ability to study it for possible benefits to mankind (see Terrestrial Ecosystems for more details)

• **Less Choice**: An aspect not given much thought is that the loss of diversity gives us less choice as humans. If certain species are lost, they are no longer available to us either as food, as enjoyment, or as resources for things we may not even know about yet. We also no longer have the ability to study this species to see how it interacts with other species in its ecosystem.

2.14 CHECK YOUR PROGRESS - 4

2.14.1 Answer The Following Questions In Brief:

(a) What do you mean by pollution?

_____
_____

_____

(b) State the different types of pollution.

_____

_____

 (c) How would you prevent Land Pollution?

_____

_____

(d) What do you mean by Radiations?

_____

_____

2.15 SUMMARY:

In this unit we have discussed about the Growing Ecological and environmental threat like Green House Effect, Depletion of Ozone Layer, Acid Rain, Radio-Active Radiations, Pollution and Loss of Bio-Diversity etc. The ozone layer protects the Earth from the ultraviolet rays sent down by the sun. If the ozone layer is depleted by human action, the effects on the planet could be catastrophic. Ozone is present in the stratosphere. Ozone layer depletion, is simply the wearing out (reduction) of the amount of ozone in the stratosphere. While the effect of the Antarctic ozone hole

in decreasing the global ozone is relatively small, estimated at about 5% per decade, the hole has generated a great deal of interest acid rain causes acidification of lakes and streams and contributes to damage of trees at high elevations (for example, red spruce trees above 2,000 feet) and many sensitive forest soils.

We have also explained that Pollution is the introduction of a contaminant into the environment. It is created mostly by human actions, but can also be a result of natural disasters. Pollution is of three types land, air and water. The best way to prevent land pollution is to recycle, the number one way to prevent air pollution is to walk or bike more and drive less and the best way to prevent water pollution is to not throw trash and other harmful chemicals into our water supplies.

2.16 GLOSSARY:

- **Atmosphere-** General names for the layers of gases around a material body
- **Biosphere**- The part of the earth, including air, land, surface rocks, and water, within which life occurs.
- **Green House Gases-** Component of the atmosphere that contribute to the greenhouse effect
- **Global Warming**- The observable increase in global temperature considered mainly caused by the human induced enhanced greenhouse effect trapping the sun's heat in the Earth's atmosphere.
- **Heat-** Energy derived from the motion of molecules; a form of energy into which all other forms of energy may be degraded

2.17 ANSWERS TO CHECK YOUR PROGRESS 1, 2 AND 3:

2.4.1 Answer The Following Questions In Brief:

(a) There are two common meanings of the term "greenhouse effect". There is a "natural" greenhouse effect that keeps the Earth's climate warm and habitable. There is also the "man-made" greenhouse effect, which is the enhancement of Earth's natural greenhouse effect by the addition of greenhouse gases from the burning of fossil fuels (mainly petroleum, coal, and natural gas).

(b) The greenhouse effect is entirely due to the fact that the atmosphere absorbs and emits infrared energy, combined with a heat source to warm the bottom of the atmosphere (in our case, the Sun) and the cold depths of outer space above the top of the atmosphere.

2.4.2 State Whether True or False:

(a) False

(b) True

(c) False

(d) True

(e) True

2.7.1 Fill In The Blanks:

(a) Catastrophi

(b) UV radiation

(c) Antarctic ozone

(d) UVB ultraviolet light

(e) Tropospheric ozone

2.7.2 State Whether True Or False:

(a) False

(b) True

(c) True

(d) False

(e) True

2.10.1 Fill In The Blanks:

(a) Atmosphere

(b) Acidic water

(c) Ph

(d) Damaged areas

(e) Acidic compounds

(f) Aluminum

2.14.1 Answer The Following Questions In Brief:

(a) Pollution is the introduction of a contaminant into the environment. It is created mostly by human actions, but can also be a result of natural disasters. Pollution has a detrimental effect on any living organism in an environment, making it virtually impossible to sustain life

(b) There are mainly three types of pollution:

1) Land pollution

2) Air pollution

3) Water pollution

(c) The best way to prevent land pollution is to recycle. Here are a few other ways you can reduce land pollution:

- Reuse any items that you can.
- Buy biodegradable products.
- Store all liquid chemicals and waste in spill-proof containers.
- Eat organic foods that are grown without pesticides.
- Don't use pesticides.
- Use a drip tray to collect engine oil.
- Buy products that have little packaging.
- Don't dump motor oil on the ground.

(d) Radiation is energy that travels in the form of waves or high speed particles. Radiation is a process in which energetic particles or energetic waves travel through a vacuum, or through matter-containing media that are not required for their propagation

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2.19 SUGGESTED READINGS:

- Ecology and Environment   P.D. Sharma
- Environment and Ecology   Arihant Expert
- Ecology and Environment   Dr. A.K. Tripathi
- Environment and Ecology   R. Rajagopalan
- Ecology and Environment   Aldo Leopold

2.20 TERMINAL QUESTIONS:

Q1. Discuss about green house effects with example. Throw light on the consequences of green house effect.

Q2. What do you understand by Depletion of Ozone Layer? Explain the various consequences of ozone layer depletion.

Q3. What is acid rain? Explain in detail the measurement and effects of acid rain.

Q4. Describe pollution and its different types in detail. How latest technological innovation increases the pollution level?

Q5. What do you mean by Radio-Active Radiations?

UNIT 3: ROLE OF 'ECO-SYSTEMS, ECOLOGICAL INTERRELATIONSHIPS', 'FOOD CHAINS' AND 'TROPIC LEVELS' ETC., IN MAINTAINING ENVIRONMENTAL QUALITY

STRUCTURE:

3.1   Introduction

3.2   Objectives

3.3   Meaning of Eco-System

3.4   Role of 'Eco-Systems

3.5   Check Your Progress – 1

3.6   Ecological Interrelationships

3.7   Food Chains

3.8   Check Your Progress – 2

3.9   Food Chains Length

3.10   Meaning and Explanation of Various Tropic Levels'

3.11   Check Your Progress – 3

3.12   Summary

3.13   Glossary

3.14   Answer to check Your Progress

3.15   Reference

3.16   Suggested Reading

3.17   Terminal Questions

3.1 INTRODUCTION:

In the previous chapter, you have learnt about Growing Ecological threat and environmental threat that have adverse effect on living organism and environment effluents, emissions, wastes, resourcedepletion, etc., arising out of an organization'sactivities. Green House Effect, Depletion of Ozone Layer, Acid Rain, Radio-active

Radiations, Pollution and Loss of Bio-diversity were discussed in detail with their impact on human health, global warming and other things.

In the present chapter we will be discussing about the meaning and role of 'eco-systems, ecological interrelationships', 'food chains' and 'tropic levels' etc, in maintaining environmental quality.

3.2 OBJECTIVES:

After studying this unit, you will be able to:
- Explain the various role Of 'Eco-Systems,
- Understand ecological Interrelationships,
- Describe food Chains In Maintaining Environmental Quality,
- Explain tropic Levels In Maintaining Environmental Quality,

3.3 MEANING OF ECOSYSTEM:

Ecosystem services are defined as 'the capacity of natural processes and components to provide goods and services that satisfy human needs, directly or indirectly. Ecosystem services are the benefits to people from nature – benefits which can only be realized if the capacity of natural processes is retained. The assemblage of organisms and the physical, chemical, geological, and biological factors that determine their numbers is what an ecosystem is all about. This community of organisms and the non-living environment with which they interact is called an ecosystem and all the populations of organisms inhabiting an area are a community. It is important to understand that these designations provide a convenient model or framework which enables us to understanding complex and interdependent processes. In the real world however, discreet packages called "ecosystems" do not actually exist, since everything on the planet is ultimately interrelated.

Despite this, it is much more practical and convenient for scientists to look at the smaller interacting units of the planet, so we define oceanic ecosystems according to where they occur and the type of organisms which live in them. In this part of the Ocean Quest Project, we will investigate some specific examples of how we can organize an ecosystem in our own minds in a framework of Structure and Function.

3.4 ROLE OF ECOSYSTEM:

Ecosystems, the biodiversity that comprises them and the benefits they provide to people are the fundamental units for life support on Earth. They are the foundation for the natural processes of climate regulation and are a vital support for water quality, food security, and flood

protection, amongst many others. Currently there are severe pressures on the health of our ecosystems. The drivers of these pressures include climate change, biodiversity loss and resource demands by people. Natural ecosystems are being converted to other uses rapidly, for example over 40% of today's terrestrial surface is now in agriculture. At the same time climate change is posing a further substantial risk to the health of ecosystems and therefore their ability to provide ecosystem services, whilst human population growth and resource use per capita is increasing. Such a combination of environmental, climatic and economic pressures leading to food, water and energy shortages has the potential to be a 'perfect storm'. As any good sailor knows, the way to avoid such a storm is by changing direction and heading for calmer waters while preparing for whatever impacts might arise. This Policy therefore explores an ecosystem-based set of solutions that human society can use to avoid potential future problems, as well as for coping with and adapting to changes we are already experiencing and will likely continue to experience. Fundamental to achieving this is to address the way ecosystem benefits are internalized into conventional decision making tools. For example the way ecosystem services are valued and accounted for in the existing economic model and indicators like gross national products (GDP).

Currently, the global economic model and national accounting does not account for all the essential benefits that nature provides to people, especially in the long term leading to the overuse or misuse of natural resources rather than their sustainable and efficient use. Without full valuation of less-tangible natural benefits from ecosystems, use will remain unsustainable and degradation inevitable leading to the potential collapse of important ecosystem functions and services. It is increasingly evident that there is a need to develop an economic model that accurately reflects benefits to people from the environment and the costs associated with ecosystem degradation. Getting this right will help move us toward sustainability.

3.4.1 Disaster Risk Reduction:

The increasing worldwide trend in disasters, aggravated by global environmental change, calls for new approaches to hazard mitigation, as well as exposure and vulnerability reduction. Ecosystem management is a well-tested solution to sustainable development that is being revisited because of its inherent "win-win" and "no-regrets" appeal to address rising disaster and climate change issues. It is one of the few approaches that

can impact all elements of the disaster risk equation—by mitigating hazards, reducing exposure, reducing vulnerabilities, and increasing the resilience of exposed communities.

The uptake of ecosystem-based approaches for disaster risk reduction (DRR) is slow, however, despite some success stories. There are multiple reasons for this reluctance: ecosystem management is rarely considered as part of the portfolio of DRR solutions because the environmental and disaster management communities typically work independently from each other; its contribution to DRR is highly undervalued compared to engineered solutions and therefore not given appropriate budget allocations; and there are poor interactions between policymakers and researchers, leading to unclear and sometimes contradictory scientific information on the role of ecosystems for DRR (Renaud, Fabrice. G., Rieux, Karen. Sudmeier. & Estrella, 2013.

3.4.2 Ecosystems in Climate Mitigation:

A rapid response assessment report released by UNEP to mark World Environment Day 2009 indicates that that boosting investments in conservation, restoration and management of natural ecosystems will not only become important, but will provide our best and most effective way to slow down climate change and accelerate sustainable development and the achievement of the poverty-related Millennium Development Goals. Ecosystems function as the main climate regulators, both in releasing greenhouse gases (sources) and absorbing them (sinks) and in other direct and indirect interactions with the climate, but this are changing.

- Ecosystems currently absorb about half of anthropogenic CO_2 emissions (Oceans c. 24% and land c. 30%). The remaining amount is the addition to the atmospheric pool.
- But ecosystem absorption capacity is declining by about 1% per decade and is likely to decline more rapidly due to global warming and human impacts.
- At the present time emissions due to human activity are increasing.
- Current estimates put the annual global emissions of CO_2 due to human activities at about 10 Giga tons, of which about 1.5 Gt are from land use change (mainly deforestation).
- About 15-17% of global carbon emissions are from deforestation and forest degradation.

The net effect is that there is an increasing imbalance between carbon emissions and absorptioncapacity of the Earth. Therefore, to achieve climate stabilisation there is a need to manage allthree

components of the global carbon cycle, not just those resulting from fossil fuel emissionsand other human activities. This means managing the carbon sinks, too: the world's oceans, forests, grasslands, soils, and other ecosystems which can uptake and store carbon and in so doing, decreasing another source of emissions. Well managed and adequately protected ecosystems can help mitigate climate change impacts by both reducing emission levels while increasing carbon uptake and storage. Inadequate ecosystem protection has lead to degradation and therefore.

3.4.3   Ecosystems   Provide   Valuable   Adaptation Mechanisms:

Regardless of how much we reduce our use of fossil fuels, there will be shifts in climatic conditions which will affect people and ecosystems by about 0.7 degrees C from IPCC AR4. Investing in nature-based solutions through EBA gives people a proven and potentially cost effective means to cope with climate change. The ability of natural ecosystems to provide multiple benefits makes their protection, restoration, and management an ideal objective for not only mitigating climate impacts but also adapting to them. Ecosystems and the benefits they provide (e.g. climate regulation, food security, freshwater supply, disaster risk reduction) are fundamental to supporting people's livelihoods and other life on Earth.

Ecosystems play an unequivocal and increasingly important role in both ecosystem-based mitigation (carbon sequestration and storage), as described previously and ecosystem-based adaptation (i.e. nature-based societal adaptation to climate change impacts). Potential examples of the benefits of such nature based solutions are varied though many remain unmeasured and unquantified. Naturally connected floodplains and riparian ecosystems can provide flood protection for millions of people who are likely to experience increased flood risk

- Forest protection and reforestation can provide clean water and reduced flood risk.
- Deep-rooted, nitrogen fixing plants can naturally replenish soil nutrients in agricultural systems helping maintain access to food supplies. These same plants can help filter sediments and nutrients keeping our waters clean and available for human consumption while enhancing carbon sinks.
- Mangrove forests provide protection services from coastal erosion and protect human lives in the face of severe storms while providing nurseries for fish which can feed coastal populations of people

- Coral and Shellfish reefs provide protection from storm surges and are a source of food and economic resources.
- Well managed and conserved grasslands provide forage for livestock while storing carbonin above- and below ground biomass (The Role of Ecosystems in......, 2010).

3.4.4 Ecosystems support people's well-being and can alleviate poverty:

Maintaining a healthy natural resource base is critical for the benefit of all people, especially the rural poor. Over 2 billion (usually rural) people live on less than $2 per day, many of whom depend on natural resources for their well-being. Conserving natural resources can, therefore, have significant positive gains for these peoples' well-being. For example:

- Those who fish or farm for subsistence requires natural resources to survive. Sustainable harvest and production practices can help ensure longer-term access to these products.
- The poor have the least ability to change if and when their way of life is threatened – i.e. least ability to relocate, change land use, alter income source, etc. Conservation or sustainable use of natural ecosystems can help buffer potential climate impacts through helping ensure provision of key services such as water purification or soil stabilization making people less likely to have to relocate.
- The poor are the most likely to lack basic shelter and sanitation needs and therefore those most impacted by weather and changing weather patterns. Maintaining and protecting particular ecosystems can provide protection services, as mentioned previously, for vulnerable populations.

As demonstrated in these examples, ecosystems can play a pivotal role in climate adaptation through service provision. Ecosystem services are often beneficial at a local level and/or a small scale so conservation and restoring natural ecosystems can help the poor who directly depend on such benefit and buffer them from impacts due to climate and weather changes (The Role of Ecosystems in......, 2010).

3.4.5 Ecosystems and a Sustainable Economic Model:

How can any form of global level economic activity be conducted if our ecosystems deteriorate beyond the threshold of the current life support capacity? Anthropogenic climate change is seen by many (e.g. Stern Report) as the worst case of market failure. It can also be argued that ecosystem health deterioration is another form of market failure.

Therefore, regardless of how the Green Economy (or any other economic model) develops, the fundamental goal must be that natural ecosystems are maintained in a suitably healthy condition. We need to ensure that our ecosystems are protected and/or managed appropriately so as to provide the ecosystem services we rely on. Prime examples include the ability of ecosystems to support food and water security, and protection from flooding and erosion. It is widely recognised that continuous economic growth is unstable due to resource limitations. Likewise no growth may be unstable due to economic collapse. The challenge for the immediate future is therefore to develop a process of societal transformational change to an economic model that achieves a balance between growth and conservation in order to have inherent stability and sustainability. The key message here is that in order to make the necessary transformational changes, whatever they may be, we need to have healthy ecosystems to ensure the provision of our basic requirements.

The state of the ecosystems and the services they provide can thus be used to establish a true Green Economy – one that accurately assess benefits and costs where we can create a relationship that will allow us to evaluate tradeoffs. This can help us identify when is it more beneficial to restore ecosystem health for sustainable development than it is to advance greater technological solutions, and when it might be best to use a combination of both approaches. Ecosystem services provide a framework for assessing the efficacy of ecosystem-based adaptation and mitigation approaches (The Role of Ecosystems in......, 2010).

3.5 CHECK YOUR PROGRESS – 1

3.5.1 Answer The Following Questions In Brief:

(a) What is ecosystem?

_____
_____

(b) Discuss the role of ecosystem in climate mitigation?

_____
_____

3.5.2 Fill in the Blanks:

(a) Currently there are severe_____ on the health of our ecosystems.

(b) Climate change is posing a further _____to the health of ecosystems.

(c) Ecosystem management is a well-tested _____to sustainable development.

(d) About _____of global carbon emissions are from deforestation and forest degradation.

(e) Ecosystems currently absorb about half of _____CO_2 emissions.

3.6 ECOLOGICAL INTERRELATIONSHIP:

An Ecological relationship is the relationship between organisms in an ecosystem. All organisms in an ecosystem are connected. Each interaction depends on the one before it. Each population interacts with one another in a complex web of relations. Ecological relationships help better describe how they are connected.

There are six ecological relationships in which two are oppositional and four are symbiotic. The oppositional relationships are predation and competition.

The symbiotic relationships are mutualism, commensalism, amensalism and parasitism. The ecological relationship an organism has depends on the way the organism adapted to its environmental pressures on evolutionary bases (Ecological relationship, n.d.).

3.6.1 Oppositional Relationship:

3.6.1.1. Predation: This is where one organism hunts and eats the other organism. The organism hunting is called predator, while the organism being hunted is called prey. Energy received from the sun is transferred from animals when the prey is eaten by the predator. The predator now has its prey's energy.

A predator is usually a carnivore that hunts, kills and eats other animals. For example a snake eating a mouse, the snake is considered the predator because it is consuming the mouse. In another example, a striped marlin is a predator. It lives in the Pacific Ocean and preys on sardines, also a Pacific animal.

Similarly, various birds eat earthworms. However, a predator can become the prey of another larger predator. For instance, a snake may become a meal for a hawk.

3.6.1.2. Competition: Competition is when organisms compete for the same resources. This is a negative relationship because both organisms are harming each other.

- Interspecies competition
- Interspecies competition
- Competitive exclusion principle

3.6.2 Symbiotic Relationships:

3.6.2.1 Mutualism: Mutualism is a relationship in which organisms benefit from each other. This is a positive, positive relationship.

An example of this would be the bee and the flower. The bee gets nectar and honey from the flower. The bee contributes back to the flower by spreading the pollen so that the flowers can reproduce. This is a very common contribute to both the flower and the bee; they both rely on each other to survive.

There is a mutualistic relationship between spider crabs and algae. The algae live on the crabs' backs, allowing the spider crab to blend in with its environment, so that predators can't find them. The algae get a nice place to live, while in turn, the spider crab gets camouflaged. Thus, both organisms are benefited (Bar-Yam). Finally, there is even a mutualistic relationship within the human body. Bacteria live inside our intestines (getting a good place to live) and help us break down our food and get vitamins.

3.6.2.2. Commensalism: Commensalism is a relationship in which one organism benefits from another organism that is not affected. This is a positive, neutral relationship. For example a small fish called the Pilot Fish follows underneath a shark and when the shark eats something the pilot fish eats the scrap pieces of the shark original kill. Similarly, the transparent shrimp benefits from a reef because it hides within it, but the coral is not affected.

Additionally the relationship between an infectious disease and its carrier, an animal such as a mosquito, could be classified as commensalism because the mosquito is unaffected by the presence of the disease, but the mosquito transfers it to a host in which the disease can reproduce or spread more easily to others.

3.6.2.3. Parasitism: Parasitism is a relationship in which one organism (the parasite) benefits while the other (the host) is harmed. This is a positive, negative relationship. The parasite usually lives on or inside the other organism. For example, mosquito is a parasite, feeding on a human while transferring the disease called Malaria. Other examples would be ticks or fleas that live off of many large mammals. Similarly, head lice are an example of parasitism because they feed on blood from the humans head (Ecological relationship, n.d.)

3.7 FOOD CHAINS:

Food chains are directional paths of trophic energy or, equivalently, sequences of links that start with basal species, such as producers or fine organic matter, and end with consumer organisms.

A food web / chain is a linear consequence of links in a food web starting from a species that eats no other species in the web and ends at a species that is eaten by no other species in the web.

A food chain is defferent from a food web, because the complex polyphagous network of feeding relations are aggregated into trophic species and the chain only follows linear monophagous pathways. A common metric used to quantify food web trophic structure is food chain length.

In its simplest form, the length of a chain is the number of links between a trophic consumer and the base of the web and the mean chain length of an entire web is the arithmetic average of the lengths of all chains in a food web.

Food chains were first introduced by the African-Arab scientist and philosopher Al-Jahiz in the 9th century and later popularized in a book published in 1927 by Charles Elton, which also introduced the food web concept.

A food chain shows how living things get their foods. Some animals eat plants and some animals eat other animals. For example, a simple food chain links the trees & shrubs, the giraffes (that eat trees & shrubs), and the lions (that eat the giraffes). Each link in this chain is food for the next link. A food chain always starts with plant life and ends with an animal (Food Chain, n.d.).

- Plants are called producers because they are able to use light energy from the Sun to produce food (sugar) from carbon dioxide and water. The process by which plants make food is called photosynthesis.

- Animals cannot make their own food so they must eat plants and/or other animals. They are called consumers. There are three groups of consumers.

a) Animals that eat only plants are called herbivores (or primary consumers).

b) Animals that eat other animals are called carnivores.

- carnivores that eat herbivores are called secondary consumers
- carnivores that eat other carnivores are called tertiary consumers e.g., killer whales in an ocean food web ... phytoplankton → small fishes → seals → killer whales
- Animals and people who eat both animals and plants are called omnivores.
- Then there are decomposers (bacteria and fungi) which feed on decaying matter.

These decomposers speed up the decaying process that releases mineral salts back into the food chain for absorption by plants as nutrients.

3.8 CHECK YOUR PROGRESS – 2

3.8.1 Fill in the Blanks:

(a) There are _____ ecological relationships in which two are oppositional and four are symbiotic.

(b) A predator is usually a _____ that hunts, kills and eats other animals.

(c)_____is a negative relationship because both organisms are harming each other.

(d) Mutualism is a relationship in which _____ benefit from each other.

(e) The _____ usually lives on or inside the other organism.

3.9 FOOD CHAIN LENGTH:

The food chain's length is a continuous variable that provides a measure of the passage of energy and an index of ecological structure that increases in value counting progressively through the linkages in a linear fashion from the lowest to the highesttrophic (feeding) levels. Food chains are often used in ecological modeling (such as a three species food chain). They are simplified abstractions of real food webs, but complex in their dynamics and mathematical implications. Ecologists have formulated and tested hypotheses regarding the nature of ecological patterns associated with food chain length, such as increasing length increasing with ecosystem size, reduction of energy at each successive

level, or the proposition that long food chain lengths are unstable. Food chain studies have had an important role in ecotoxicology studies tracing the pathways and biomagnification of environmental contaminants.

Food chains vary in length from three to six or more levels. A food chain consisting of a flower, a frog, a snake and an owl consists of four levels; whereas a food chain consisting of grass, a grasshopper, a rat, a snake and finally a hawk consists of five levels. Producers, such as plants, are organisms that utilize solar energy or heat energy to synthesize starch. All food chains must start with a producer. In the deep sea, food chains centered onhydrothermal vents exist in the absence of sunlight. Chemosynthetic bacteria and archaea can use hydrogen sulfide from hydrothermal vents as an energy source (just as plants use sunlight) to produce carbohydrates; they form the base of the food chain. Consumers are organisms that eat other organisms: in most food chains, all the organisms in a food chain are consumers. In a deep-sea food chain, tube worms, clams, and mussels harbor the chemosynthetic bacteria and make use of the food they produce. They are all eaten by crabs, which are in turn consumed by octopuses (Food Chain, n.d.).

- **Do you know why there are more herbivores than carnivores?** In a food chain, energy is passed from one link to another. When a herbivore eats, only a fraction of the energy (that it gets from the plant food) becomes new body mass; the rest of the energy is lost as waste or used up by the herbivore to carry out its life processes (e.g., movement, digestion, reproduction). Therefore, when the herbivore is eaten by a carnivore, it passes only a small amount of total energy (that it has received) to the carnivore. Of the energy transferred from the herbivore to the carnivore, some energy will be "wasted" or "used up" by the carnivore. The carnivore then has to eat many herbivores to get enough energy to grow.

  Because of the large amount of energy that is lost at each link, the amount of energy that is transferred gets lesser and lesser.

- **The further along the food chain you go, the less food (and hence energy) remains available:** The above energy pyramid shows many shrubs & grass providing food and energy to zebras. Note that as we go up, there are fewer zebras than shrubs & grass and even fewer lions than zebras ... as we go further along a food chain, there are fewer and fewer consumers. In other words, a large mass of living things at the base is required to support a few at the top ... many herbivores are needed to support a few carnivores.

- **Most food chains have no more than four or five links:** There cannot be too many links in a single food chain because the animals at the end of the chain would not get enough food (and hence energy) to stay alive. Most animals are part of more than one food chain and eat more than one kind of food in order to meet their food and energy requirements. These interconnected food chains form a food web.

- **A change in the size of one population in a food chain will affect other populations**: This interdependence of the populations within a food chain helps to maintain the balance of plant and animal populations within a community. For example, when there are too many zebras; there will be insufficient shrubs and grass for all of them to eat. Many zebras will starve and die. Fewer zebras means more time for the shrubs and grass to grow to maturity and multiply. Fewer zebras also mean less food is available for the lions to eat and some lions will starve to death. When there are fewer lions, the zebra population will increase.

3.10 TROPHIC LEVEL:

The trophic level of an organism is the position it occupies in a food chain. A food chain represents a succession of organisms that eat another organism and are, in turn, eaten themselves. The number of steps an organism is from the start of the chain is a measure of its trophic level. Food chains start at trophic level 1 with primary producers such as plants, move to herbivores at level 2, predators at level 3 and typically finish with carnivores or apex predators at level 4 or 5. The path along the chain can form either a one-way flow or a food "web". Ecological communities with higher biodiversity form more complex trophic paths (Trophic Level, n.d.)

A group of organisms that occupy the same position in a food chain. (The American Heritage® Dictionary of the English Language)

3.10.1 Overview:

Consumer categories based on material eaten (plant: green shades are live, brown shades are dead; animal: red shades are live, purple shades are dead; or particulate: grey shades) and feeding strategy (gatherer: lighter shade of each color; miner: darker shade of each color) The three basic ways in which organisms get food are as producers, consumers and decomposers.

- **Producers (Autotrophs**) are typically plants or algae. Plants and algae do not usually eat other organisms, but pull nutrients from the soil or the ocean and manufacture their own food using

photosynthesis. For this reason, they are called primary producers. In this way, it is energy from the sun that usually powers the base of the food chain. An exception occurs in deep-sea hydrothermal ecosystems, where there is no sunlight. Here primary producers manufacture food through a process called chemosynthesis.

• **Consumers (Heterotrophs)** are species which cannot manufacture their own food and need to consume other organisms. Animals that eat primary producers (like plants) are called herbivores. Animals that eat other animals are called carnivores, and animals that eat both plant and other animals are called omnivores.

• **Decomposers (Detritivores**) break down dead plant and animal material and wastes and release it again as energy and nutrients into the ecosystem for recycling. Decomposers, such as bacteria and fungi (mushrooms), feed on waste and dead matter, converting it into inorganic chemicals that can be recycled as mineral nutrients for plants to use again.

Trophic levels can be represented by numbers, starting at level 1 with plants. Further trophic levels are numbered subsequently according to how far the organism is along the food chain.

• **Level 1**: Plants and algae make their own food and are called primary producers.

• **Level 2**: Herbivores eat plants and are called primary consumers .For example: Rabbits eat plants at the first trophic level, so they are primary consumers.

• **Level 3**: Carnivores which eat herbivores are called secondary consumers.For example: Foxes eat rabbits at the second trophic level, so they are secondary consumers.

• **Level 4**: Carnivores which eat other carnivores are called tertiary consumers.For example: Golden eagles eat foxes at the third trophic level, so they are tertiary consumers.

• **Level 5**: Apex predators which have no predators are at the top of the food chain. For example: The fungi on this tree feed on dead matter, converting it back to nutrients that primary producers can use.

In real world ecosystems, there is more than one food chain for most organisms, since most organisms eat more than one kind of food or are eaten by more than one type of predator. A diagram which sets out the intricate network of intersecting and overlapping food chains for an ecosystem is called its food web. Decomposers are often left off food webs, but if included, they mark the end of a food chain. Thus food chains

start with primary producers and end with decay and decomposers. Since decomposers recycle nutrients, leaving them so they can be reused by primary producers, they are sometimes regarded as occupying their own trophic level (Trophic Level, n.d.)

3.11 CHECK YOUR PROGRESS – 3

3.11.1 State Whether True or False:

(a) Food chains are often used in ecological modeling such as a three species food chain.

(b) The word trophic derives from the Germen word trophē referring to food or feeding.

(c) Thus food chains start with primary producers and end with decay and decomposers.

(d) Food chains vary in length from three to five or more levels.

(e) Plants and algae do not usually eat other organisms, but pull nutrients from the soil or the ocean.

3.11.2 Fill In The Blanks:

(a) The food chain's length is a_____ that provides a measure of the passage of   energy.

(b) The further along the food chain you go, the _____remains available.

(c) Most animals are part of more than one _____and eat more than one kind of food   in order to meet their food and energy requirements.

(d) Ecological communities with higher biodiversity form more complex_____.

(e) _____are species which cannot manufacture their own food and need to consume other organisms.

3.12 SUMMARY:

In this unit you have learnt about the meaning of eco-system that eco-system of any given space-time-unit represents the sum of all living organisms and physical environment. Further you have learnt about ecological interrelationships, food chains tropic levels' etc, in maintaining environmental quality. Food chains were first introduced by the African-Arab scientist and philosopher Al-Jahiz in the 9th century. Food chains are often used in ecological modeling such as a three species food chain. A food chain represents a succession of organisms that eat another organism and are, in turn, eaten themselves. It was also discussed that

most animals are part of more than one food chain and eat more than one kind of food in order to meet their food and energy requirements.

3.13 GLOSSARY:

- **Carbon Dioxide**- A gas with the chemical formula CO_2; the most abundant greenhouse gas emitted from fossil fuels.
- **Climate-** The general variation of whether in a region over long periods of time.
- **Emissions-** Substances such as gases or particles discharged into the atmosphere as a result of natural processes of human activities
- **Energy**- A property of all systems which can be turned into heat and measured in heat units
- **Erosion**- Displacement of solids usually by the agents of currents such as wind, water
- **Food Chain**- Describe the feeding relationships between species within an ecosystem

3.14 ANSWERS TO CHECK YOUR PROGRESS 1, 2 AND 3:

3.5.1 Answer The Following Questions In Brief:

(a) Ecosystem services are defined as 'the capacity of natural processes and components to provide goods and services that satisfy human needs, directly or indirectly.

(b) Ecosystems function as the main climate regulators, both in releasing greenhouse gases (sources) and absorbing them (sinks) and in other direct and indirect interactions with the climate.

3.5.2 Fill in the Blanks:

(a) Pressures
(b) Substantial risk
(c) Solution
(d) 15-17%
(e) Anthropogenic

3.8.1 Fill in the Blanks:

(a) Six
(b) Carnivore
(c) Competition
(d) Organisms
(e) Parasite

3.11.1 State Whether True or False:

(a) True

(b) False

(c) True

(d) False

(e) True

3.11.2 Fill in The Blanks:

(a) Continuous variable

(b) Less food

(c) Food chain

(d) Trophic paths

(e) Consumers (heterotrophs)

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3.16 SUGGESTED READINGS:

- Ecology and Environment   P.D. Sharma
- Environment and Ecology   Arihant Expert
- Ecology and Environment   A.K. Tripathi
- Environment and Ecology   R. Rajagopalan
- Ecology and Environment   Aldo Leopold

3.17 TERMINAL QUESTIONS:

Q1. Explain the meaning of Eco-System. What is the role of eco-system, discuss briefly?

Q2. Discuss about the ecological interrelationships.

Q3. What do you mean by trophic level? Discuss the ways by which organisms get their food.

UNIT4: ENVIRONMENTAL CONSERVATION AND SUSTAINABLE RESOURCE USE: RELEVANCE VIS A VIS COMPULSION

STRUCTURE:

4.1   Introduction

4.2   Objectives

4.3   Environment Conservation

4.4   Approaches of Environment Conservation

4.5   Check Your Progress- 1

4.6   Sustainable Resource Use

4.7   Check Your Progress-2

4.8   Summary

4.9   Glossary

4.10 Answer to check Your Progress

4.11 References

4.12 Suggested Readings

4.13 Terminal Questions

4.1 INTRODUCTION:

In the previous chapter, you have learnt about role of eco-systems, ecological interrelationships, food chains and tropic levels etc that how are they helpful in maintaining environmental quality.

In the present chapter we will be discussing about the environmental conservation, Environmental Conservation is also known as environmental protection. Further the different approaches of Environmental Conservation will be explained briefly. Finally we will be discussing about sustainable resource use: relevance vis a vis compulsion that resources are the very important part of every economy.

4.2 OBJECTIVES:

After studying this unit, you will be able to:
  • Understand the concept of Environmental Conservation
  • Explain the different approaches of Environmental Conservation

• Discuss about the sustainable resource use

4.3 ENVIRONMENTAL CONSERVATION:

Environmental Conservation is also called Environmental protection; it is a practice of protecting the natural environment on individual, organizational or governmental levels, for the benefit of both the natural environment and humans. Because of the pressures of population and technology, the biophysical environment is being degraded, sometimes permanently. This has been identified, and governments have started placing restraints on activities that cause environmental degradation. Since the 1960s, activity of environmental movements has created awareness of the various environmental issues. There is no agreement on the extent of the environmental impact of human activity, and protection measures are hardly criticized (Environmental Protection).

Academic institutions now offer courses, such as environmental studies, environmental management and environmental engineering, that teach the history and methods of environment protection. Conservation of the environment is needed because of various human activities. Waste production, air pollution, and loss of biodiversity are some of the main issues that are related to environmental conservation.

Environmental conservation is affected by three interwoven components: environmental legislation, ethics and education. Each of these factors plays its part in influencing national-level environmental decisions and personal-level environmental values and behaviors. For environmental protection to become a reality, it is important for societies to develop each of these areas that, together, will inform and drive environmental decisions.

4.4 APPROACHES TO ENVIRONMENTAL CONSERVATION

There are three approaches of Environmental conservation;

4.4.1 Voluntary Environmental Agreements:

In industrial countries, voluntary environmental agreements often provide a platform for companies to be recognized for moving beyond the minimum regulatory standards and, thus, support the development of best environmental practice. In developing countries, such as throughout Latin America, these agreements are more commonly used to remedy significant levels of non-compliance with mandatory regulation. The challenges that exist with these agreements lie in establishing baseline data, targets, monitoring and reporting. Due to the difficulties inherent in

evaluating effectiveness, their use is often questioned and, indeed, the environment may well be adversely affected as a result. The key advantage of their use in developing countries is that their use helps to build environmental management capacity.

4.4.2 Ecosystems Approach:

An ecosystems approach to resource management and environmental protection aims to consider the complex interrelationships of an entire ecosystem in decision making rather than simply responding to specific issues and challenges. Ideally the decision-making processes under such an approach would be a collaborative approach to planning and decision making that involves a broad range of stakeholders across all relevant governmental departments, as well as representatives of industry, environmental groups and community. This approach ideally supports a better exchange of information, development of conflict-resolution strategies and improved regional conservation.

4.4.3 International Environmental Agreements:

Many of the earth's resources are especially vulnerable because they are influenced by human impacts across many countries. As a result of this, many attempts are made by countries to develop agreements that are signed by multiple governments to prevent damage or manage the impacts of human activity on natural resources. This can include agreements that impact factors such as climate, oceans, rivers and air pollution.

These international environmental agreements are sometimes legally binding documents that have legal implications when they are not followed and, at other times, are more agreements in principle or are for use as codes of conduct. These agreements have a long history with some multinational agreements being in place from as early as 1910 in Europe, America and Africa. Some of the most well-known multinational agreements include: the Kyoto Protocol, Vienna Convention on the Protection of the Ozone Layer and Rio Declaration on Environment and Development (Environmental Protection).

4.5 CHECK YOUR PROGRESS - 1

4.5.1 Fill in The Blanks:

a) Environmental Conservation is also called _____.

b) Waste production, air pollution, and loss of biodiversity are some of the issues related to_____.

c) Environmental conservation is influenced by _____interwoven factors.

d) Many of the earth's resources are especially _____because they are influenced by human impacts across many countries.

e) Well-known multinational agreements include: the _____, Vienna Convention on the Protection of the Ozone Layer and Rio declaration.

4.6 SUSTAINABLE USE OF NATURAL RESOURCES:

Resources are the backbone of every economy. In using resources and transforming them, capital stocks are built up which add to the wealth of present and future generations (Mensah, 2004). However, the dimensions of our current resource use are such that the chances of future generations - and the developing countries - to have access to their fair share of scarce resources are endangered. Moreover, the consequences of our resource use in terms of impacts on the environment may induce serious damages that go beyond the carrying capacity of the environment. These effects risk being aggravated once the developing world has taken up growth and resource use similar to the industrialised countries.

4.6.1 Thematic Strategy on the Sustainable Use of Natural Resources:

On 21st December 2005 the European Commission proposed a strategy on the Sustainable Use of Natural Resources used in Europe. The objective of the strategy is to reduce the environmental impacts associated with resource use and to do so in a growing economy. Focusing on the environmental impacts of resource use will be a decisive factor in helping the EU achieves sustainable development.

This is the third Thematic Strategy that the Commission adopted following the provisions of the 6th Environmental Action programme (6 EAP).

The Action Programme addressed the issue of resources and called for the development of a Thematic Strategy on the sustainable use of natural resources (Resource Strategy). The objective can be described as: "ensuring that the consumption of resources and their associated impacts do not exceed the carrying capacity of the environment and breaking the linkages between economic growth and resource use (Sustainable Use of Natural...).

4.6.2 International Panel on Sustainable Resource Management:

This initiative finds its origin in the strategy on the sustainable use of natural resources. The Panel aims to provide scientific evidence to underpin the delivery of policies on resource efficiency.

Made up of leading scientists, it was set up in 2007 under the auspices of the United Nations Environment Programme (UNEP) to provide authoritative and independent advice to decision makers globally.

The first report "Assessing biofuels" was launched on 16 October 2009. The Panel will deliver further reports on topics including the decoupling of environmental degradation from economic growth, the environmental impacts from production and consumption and metal recycling (Sustainable Use of Natural...).

4.6.3 Sustainable Use of Marine Resources:

The marine environment has a wealth of living resources of value to humans, ranging from food, organisms for aquaria, materials and products, as well as bioactive compounds that can be used in medicines, nutrichemicals and agriculture.

The use of these resources needs to be managed to ensure that they are not harvested beyond the natural replenishment capacity of the ecosystem. Sustainable use of a particular resource is at a rate that will not impair the ability of future generations to meet their needs. The demand for many marine resources, however, exceeds natural supply. The sustainable supply for some of these marine resources may be met by aquaculture. Research at AIMS has helped inform the development of sustainable wild harvesting management. As these practices lead to long term sustainable harvesting they also limit supply. To meet supply, a focus on tropical aquaculture has helped improve the rearing of organisms for seafood, the cosmetic and aquarium industries and reduce the impacts of intensive farming techniques on the environment. There is great potential for the discovery of new commercially valuable products from marine sources. The AIMS biodiscovery collection provides a resource to investigate such products (Sustainable Use of Marine....).

4.7 CHECK YOUR PROGRESS - 2

4.7.1 Fill In The Blanks:

(a) Resources are the _____ of every economy.
(b) The first report "Assessing biofuels" was launched on_____.

(c)_____-proposed a Strategy on the Sustainable Use of Natural Resources used in Europe

(d) The demand for many marine resources exceeds_____.

4.8 SUMMARY:

In this unit we have discussed the meaning of Environmental Conservation that it is a practice of protecting the natural environment on individual, organizational or governmental levels. Further we have discussed the different approaches to Environmental Conservation viz; Voluntary environmental agreements, Ecosystems approach, International environmental agreements. Sustainable Use of Natural Resources were also explained that in using resources and transforming them, capital stocks are built up which add to the wealth of present and future generations. The use of these resources needs to be managed to ensure that they are not harvested beyond the natural replenishment capacity of the ecosystem

4.9 GLOSSARY:

- **Environment**- All the factors in a habitat which affect an organism; these may be either living (biotic) or non living (abiotic).
- **Climate-** It is the weather condition for a longer period of time.
- **Ecosystem-** All the communities/living organisms/ biotic factors and environmental / abiotic factors in a particular area; these factors are interacting and interdependent; they make up a self-contained system which is self supporting in terms of energy flow.

4.10 ANSWERS TO CHECK YOUR PROGRESS 1 AND 2:

4.5.1 Fill in the Blanks:

(a) Environmental protection

(b) Environmental conservation

(c) Three

(d) Vulnerable

(e) Kyoto Protocol

4.7.1 Fill in the Blanks:

(a) Backbone

(b) 16 October 2009

(c) European Commission

(d) Natural supply

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4.12 SUGGESTED READINGS:

- Ecology and Environment   P.D. Sharma
- Environment and Ecology   By Arihant Expert
- Ecology and Environment   A.K. Tripathi
- Environment and Ecology   R. Rajagopalan
- Ecology and Environment   Aldo Leopold

4.13 TERMINAL QUESTIONS:

Q1. What do you mean by Environmental Conservation? Discuss the different approaches of environmental Conservation.

Q2. Write a detail note on sustainable resource use.

UNIT 5: IMPACT OF TOURISM ON ECOLOGY AND ENVIRONMENT

STRUCTURE:

5.1 Introduction

5.2 Objectives

5.3 Impact of Tourism on Ecology and Environment

5.4 Check Your Progress-1

5.5 Summary

5.6 Glossary

5.7 Answer to Check Your Progress- 1

5.8 References

5.9 Suggested Readings

5.10 Terminal Questions

5.1 INTRODUCTION

In the previous unit, you have learnt about the environmental conservation, approaches of environmental conservation and also about the sustainable resource use so that the resources may be preserve for the future generation. But in this unit you will study about the various positive as well as negative impact of tourism on ecology and environment. We know that the ecology is concerned with the relationship between environment and all living being. Due to the tourism development the environment is also affected in both ways such as positive and negative. Tourism and the environment have a very complex and interdependent relationship. Tourism is one of the largest industries in today's world economy and is a great source of   foreign exchange for many developing countries, whose major assets are their natural resources. At the same time, it is the environmental quality of a place that will determine the success of the tourism industry, since it is the principal attraction.   There have been disagreements on whether tourism in beneficial or harmful to the environment.

The destruction of ecology due to the fast expanding tourism industry can be very costly for the population. The damages caused by the industry that controls country's economy are much worse than people

acknowledge. It deprives local community from natural resources. They do not get enough water, flora and fauna is damaged by the large amount of people visiting, pollution is getting worse and the resources are slowly diminishing. Of course, there are benefits to the industry but at what cost; if you do not start looking into the problems now and fixing them, they will only get worse with time. If all of this is sacrificed for the tourism industry, the country has to be getting something back, something that is worth more not only to private individuals (hotel owners and operators) but to the people of a particular area.

5.2 OBJECTIVES

After studying this unit you will able to learn:-
- Tourism and Environment Relationship
- Impact of Tourism on Natural Vegetation
- Impact of Tourism on Water Quality
- Impact of Tourism on Air Quality
- Impact of Tourism on Wildlife
- Impact of Tourism on Geology
- Impact of Tourism on Environmental Degradation
- Measures to control negative impact of Tourism on Ecology and Environment

5.3 IMPACT OF TOURISM ON ECOLOGY AND ENVIRONMENT

5.3.1 Tourism and Environment Relationship

Three different relationships may exist between those promoting tourism and those advocating environmental conservation. This relationship is highly dependent upon natural resources.

Tourism and environmental conservation can exist in a situation in which both camps promote their respective position, remain in isolation, and establish little contact with each other. This situation is unlikely to remain for a long period because of the substantial changes in the environment, which are apt to occur with the growth of mass tourism. This stage, therefore, is usually succeeded by other symbiotic or conflicting relationships;

Tourism and conservation may enjoy a mutually supportive or symbiotic relationship where they are organized in such a way that each benefits from the other. From the perspective of the conservationist,

environmental features and conditions are left as close as possible to their original state but, at the same time they provide benefits to the tourists who view and experience them. There are few places where this has been achieved;

Tourism and conservation can be in conflict, particularly when tourism induces detrimental effects to the environment. Most documented relationships between tourism and the environment fall into this category. On some occasions, effects of tourism have stimulated conservatory measures in order to protect fragile ecosystems. More commonly, the damage has already reached irreparable proportions.

5.3.2 Impact of Tourism on Natural Vegetation

Vegetation is one of the major attractions of many destination areas. Large grassland, forests or greenery in general, create beautiful scenes for tourist projects. In spite of vegetation being a primary tourist resource, it is important to mention tourist and recreational activities affecting vegetation. The collection of flower plants and, the careless use of fire in parks, the excessive dumping of garbage, the construction of campsites and the vehicular traffic could involve the removal of vegetation. Following can summarize the problem related with vegetation:

- Some vegetation cover in grassland ecosystems registers little deterioration because of its high proportion of resilient species. Hence, the effects of tourism will vary greatly from ecosystem to ecosystem.
- The reproduction rates of vegetation are greatly reduced in trampled areas.
- There is a strong relationship between soil and vegetation. Soil compaction will influence plant growth and the age structure of vegetation.
- It is important to note that vegetation's damages, which occur, as the result of tourism development is less than the damages caused by other development such as, industrial and urban development.

5.3.3 Impact of Tourism on Water Quality

Water pollution has reached crisis proportions in several of the older tourist resort. There is a real threat that this could occur around the coastal area. Tourist developments along the coast are responsible for large quantities of waste materials.

Accordingly, tourism threatens to undermine the resource, which has been primarily responsible for its existence. For activities such as

swimming, fishing, and many types of boating, the need of high quality water is essential. The introduction of pollutants into water bodies is both environmentally degrading and economically disastrous for water-based tourist resorts.

5.3.4 Impact of Tourism on Air Quality

As tourism involves travelling, normally by motorcar, ship, train, bus or airplane, the contribution of each to air pollution is intrinsic. Although the contribution of tourism to air pollution may be less than for some other forms of human activity. The airlines are a major mode of travel for international tourists.

The Studies showed that carbon monoxide levels were less than one third of those recorded in the downtown areas of those cities. On the other hand, the creation of parks and gardens for tourism purpose could be a factor enriching environment and protecting air from pollution.

5.3.5 Impact of Tourism on Wildlife

Hunting animals and, more recently, the viewing and photographing wildlife are important tourist activities. Such activities may cause some impacts on wildlife. The direct effects of tourist activities on wildlife depend largely upon the intensity of tourist development, the resilience of species to the presence of tourists, and their subsequent adaptability. Some of the major effects, which have been mentioned, are as follows:

The pressure of tourists taking photographs has caused a noticeable decline in the breeding success of many species of coastal birds. The chasing of animals has increased markedly in recent year, and the erratic behaviour of some divers caused great damage to the coral reefs and scared fish and animals.

The development of highways and urban areas in areas, which were, traditionally feeding and breeding areas such as forests and natural grassland, has forced wildlife to relocate.

5.3.6 Impact of Tourism on Geology

Information on the effects of tourism on geology is scarce. There has been occasional mention of the impact of collectors of minerals, rocks and fossils, and in some areas the stripping caves of their natural formations has become a serious problem. Damage has also occurred to the coral reefs, and in areas of unique features, it consequently would be a major problem in coastal tourist areas.

5.3.7 Impact of Tourism on Environmental Degradation

Environmental degradation has become the talk of the town in the recent years. Developmental activities have taken a toll on the environment and has have resulted in loss of biodiversity. One of the major causes of the degeneration of environment is unplanned and unchecked developmental activities in the tourist destinations. Tourism, though, beneficial for the country's economy, harms nature when it is not planned properly. People who come to enjoy the scenic beauty often litter the places with polythene and left over food without thinking about its adverse impact on the environment. Tourism industry often involves construction of hotel and lodges. These lodges are created near or on the banks of a lake or a river. The sewage water flows into lake water or sea, polluting its marine ecosystem. Hotel owners who have vested commercial interests does not even take into account the unfavourable consequences on environment. Construction of jetties alters the wave pattern of the lake depositing silt in it. Introduction of mechanized boards to cash in on tourists damages the flora and fauna of ecosystem as the both leave tresses of oil, petrol and diesel in the water.

5.3.8 Measures to Control Negative Impact of Tourism on Ecology and Environment

- **The Government's:** The management plan for each area should be prepared through professional landscape architects and urban planners and in consultation with the local community as well as others directly concerned.

  Structures creating visual pollution, anaesthetic values and non-compatible architecture should be controlled.

  Exclude developments in geologically unstable zones and define development and buffer zones after proper environmental impact assessments.

  Specify environmental, physical and social carrying capacities to limit development activities.

  Ensure continuous monitoring of adverse effects of tourism activities and initiate suitable corrective measures.

  Recognise and award quality labels to eco- tourism operators.

  Prepare and widely distribute codes of conduct to all visitors.

  Launch training programmes on eco tourism to administrators, planners, operators and general public.

- **Developers and operators:** Respect and follow the planning restrictions, standards and codes provided by the Government and local authorities.

  Implement sound environment principle through self regulation.

  Practice environmental impact assessment for all new projects and conduct development of environmental improvement programmes.

  Be sensitive to conservation of environmentally protected or threatened areas, species and scenic, aesthetic, achieving landscape enhancement wherever possible.

  Ensure that all structures are unobtrusive and do not interfere with the natural ecosystem to the maximum extent.

- **The local population:** Realise and respect the value of environment, flora and fauna, monuments and cultural heritage.

  Practice conservation of nature and culture as a way of life.

  Establish guidelines to protect valuable local resources and foster tourism development.

  Realise and react to the potential threat of investors who see opportunities for development but lack sensitivity to local value.

  Become effective nature guides and conservationists of nature areas by enhancing the practical and ancestral knowledge of the natural features of the area and be friendly with the visitors and help them to practice ecotourism codes.

  Recognize the optimal environment capacity and sociological use limits on the site in creating tourist facilities. They should also take into account safety and convenience of tourists.

  Buildings should be designed strictly on functional and environmental considerations and avoid over construction.

  Physical planning, architectural design and construction of tourist facilities should employ eco-techniques like solar energy, capture and re-utilization of rain water, recycling of garbage, natural cross ventilation instead of air-conditioning, a high level of self-sufficiency in food generation through orchards, ecological farms, aquaculture, etc.

  Energy and water saving practices should be employed to the extent possible. Also practice fresh water management and control sewage disposal.

  Control and diminish air emissions, pollutants and noise levels.

  Control and reduce environmentally un-friendly products such as asbestos, CFCs, pesticides and toxic, corrosive, infectious, explosive or flammable materials.

In marketing ecotourism products, customers should be given correct information, as the visitors who appreciate ecotourism products are also environmentally aware target groups.

Exercise due regard for the interests of local population, including their history, tradition and culture and future development.

Involve the local community in various activities and vocations.

- **The visitors:** Contribute to the conservation of any habitat of flora and of any site whether natural or cultural, which may be affected by tourism.

Make no open fires and discourage others from doing, so. If water has to be heated with scarce firewood, use as little as possible. Where possible, use kerosene or fuel efficient wood stoves.

Remove litter, burn or bury paper and carry back all non detergents in streams or springs. If no toilet facilities are available, try to comfort yourself at least 30 meters away from water sources and bury or cover the waste.

Plants should be left to flourish in their natural environment and resist from taking away cuttings, seeds and roots.

Help the guides and porters to follow conservation measures. Do not allow the cooks or porters to throw garbage in streams or rivers.

Respect the natural and cultural heritage of the area and follow local customs.

5.4 CHECK YOUR PROGRESS - 1

5.4.1 Answer The Following Questions In Brief:

(a) Write a short note on impact of Tourism on Air Quality.

_____
_____
_____
_____

(b) Write down the impact of Tourism on Environmental Degradation.

_____
_____
_____
_____
_____

5.4.2 Fill In The Blanks:

1. _____ Concerned with the relationship between environment and all living being.

2. Surrounding area just above the earth surface is called_____

3. Large grassland, forests or greenery are called_____

4. Vegetation's damages, which occur, as the result of tourism development are_____ than the damages caused by other development such as, industrial and urban development.

5.5 SUMMARY

In this unit we have discuss about the meaning of ecology and environment, relationship between tourism and environment. Various impact of tourism on ecology and environment also been discussed in this unit. Ecology is concerned with the relationship between environment and all living being. Due to the tourism development the environment is also affected in both ways such as positive and negative. Tourism and the environment have a very complex and interdependent relationship. The destruction of ecology due to the fast expanding tourism industry can be very costly for the population. The damages caused by the industry that controls country's economy are much worse than people acknowledge. It deprives local community from natural resources. They do not get enough water, flora and fauna is damaged by the large amount of people visiting, pollution is getting worse and the resources are slowly diminishing.

Vegetation is one of the major attractions of many destination areas. Large grassland, forests or greenery in general, create beautiful scenes for tourist projects. In spite of vegetation being a primary tourist resource, it is important to mention tourist and recreational activities affecting vegetation. The collection of flower plants and, the careless use of fire in parks, the excessive dumping of garbage, the construction of campsites and the vehicular traffic could involve the removal of vegetation. Environmental degradation has become the talk of the town in the recent years. Developmental activities have taken a toll on the environment and has have resulted in loss of biodiversity. One of the major causes of the degeneration of environment is unplanned and unchecked developmental activities in the tourist destinations. Tourism, though, beneficial for the country's economy, harms nature when it is not planned properly. People who come to enjoy the scenic beauty often litter the places with polythene and left over food without thinking about its adverse impact on the environment.

Tourism industry often involves construction of hotel and lodges. These lodges are created near or on the banks of a lake or a river. The

sewage water flows into lake water or sea, polluting its marine ecosystem. Hotel owners who have vested commercial interests does not even take into account the unfavourable consequences on environment.

5.6 GLOSSARY

- **CFC**- Chloro Fluro Carbon
- **Climate**- It is the weather condition for a longer period of time.
- **Ecology**- Relationship between environment and all living being.
- **Environment-** Area just above the earth surface.
- **Geology-** Study of interior parts of earth like minerals, rocks, fossils etc.
- **Tourism-** It is a kind of activity concern with the movement of people takes place.
- **Vegetation**- Large grassland, forests or greenery.

5.7 ANSWER TO CHECK YOUR PROGRESS: 1

5.4.1 Answer The Following Questions In Brief:

(a) Although the contribution of tourism to air pollution may be less than for some other forms of human activity. The airlines are a major mode of travel for international tourists.

The Studies showed that carbon monoxide levels were less than one third of those recorded in the downtown areas of those cities. On the other hand, the creation of parks and gardens for tourism purpose could be a factor enriching environment and protecting air from pollution.

(b) People who come to enjoy the scenic beauty often litter the places with polythene and left over food without thinking about its adverse impact on the environment. Introduction of mechanized boards to cash in on tourists damages the flora and fauna of ecosystem as the both leave tresses of oil, petrol and diesel in the water.

5.4.2 Fill In The Blanks:

(a) Ecology
(b) Environment
(c) Natural vegetation
(d) less

5.8 REFERENCES

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5.9 SUGGESTED READINGS

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- Economic Impact of Tourism development An Indian Experience by Chattopadhyay, K.
- Travel and Tourism Management by Singh, S.P.
- Tourism and the Environment by Narasaiah, M.L.

5.10 TERMINAL QUESTIONS

1. Discuss in detail the relationship between Tourism and Environment.
2. Explain the impact of tourism on Natural Vegetation.
3. Explain the impact of tourism on wildlife.
4. Discuss the measures to control the negative impact of Tourism on Ecology and Environment in context of local population and visitors.

UNIT 6: SOCIAL COST BENEFIT OF TOURISM

STRUCTURE:

6.1 Introduction

6.2 Objectives

6.3 Social Cost Benefit of Tourism

6.4 Check Your Progress-1

6.5 Summary

6.6 Glossary

6.7 Answer to Check Your Progress- 1

6.8 References

6.9 Suggested Readings

6.10 Terminal Questions

6.1 INTRODUCTION

In the previous unit, you have learnt about the meaning of ecology, environment and various positive as well as negative impact of tourism on ecology and environment is also been discussed. Some measures to minimize the negative impact of tourism on ecology and environment are also been explained. But in this unit you will study about the social cost benefit of tourism. Cost benefit analysis is a procedure for evaluating the desirability of a project by weighting benefits against costs. Results may be expressed in different ways, including internal rate of return, net present value and benefit-cost ratio. Cost-benefit analysis is a formal analysis of the impacts of a measure or programme, designed to assess whether the advantages (benefits) of the measure or programme are greater than its disadvantages (costs). Cost-benefit analysis is one of a set of formal tools of efficiency assessment. Efficiency assessment refers to analyses made for the purpose of identifying how to use scarce resources to obtain the greatest possible benefits of them. Cost-benefit analysis is a technique which is based on welfare economics.

Social cost-benefit analysis is a systematic and cohesive method to survey all the impacts caused by developing a project. It comprises not just the financial effects (investment costs, direct benefits like tax and

fees, etc), but all the social effects, like: pollution, safety, indirect (labour) market, legal aspects, et cetera. The main aim of a social cost-benefit analysis is to attach a price to as many effects as possible in order to uniformly weigh the above-mentioned heterogeneous effects. As a result, these prices reflect the value a society attaches to the caused effects, enabling the decision maker to form a statement about the net social welfare effects of a project. A major advantage of a social cost-benefit analysis is that it enables investors to systematically and cohesively compare different project alternatives.

6.2 OBJECTIVES

After studying this unit you will able to learn:-
- Meaning of Cost Benefit Analysis
- History of Cost-Benefit Analysis
- Key Analyses in Cost-Benefit Analysis
- Tourism Social Costs Benefits
- Pros and Cons of Cost Benefit Analysis

6.3 SOCIAL COST BENEFIT OF TOURISM

Meaning of Cost Benefit Analysis:

Cost Benefit analysis (CBA) is a technique for evaluating a project or investment by comparing the economic benefits with the economic costs of the activity. Cost benefit analysis has several objectives. First, cost benefit analysis can be used to evaluate the economic merit of a project. Second the results from a series of benefit-cost analyses can be used to compare competing projects. Cost benefit analysis can be used to assess business decisions, to examine the worth of public investments, or to assess the wisdom of using natural resources or altering environmental conditions. Ultimately, cost benefit analysis aims to examine potential actions with the objective of increasing social welfare.

Regardless of the aim, all cost benefit analysis has several properties in common. A cost benefit analysis begins with a problem to be solved. For example, a community may have the goal of alleviating congestion on roads in an area. Various projects that might solve the particular problem are then identified. As an example, alternative projects to alleviate road congestion in an area might include a new highway, a public bus system, or a light rail system. The costs and benefits of these projects would be identified, calculated, and compared. Decisions are typically not made solely on the basis of cost benefit analysis, but cost

benefit analysis is useful and sometimes required by law. Without a doubt, results from a cost benefit analysis can be used to raise the level of public debate surrounding a project.

History of Cost-Benefit Analysis

CBA has its origins in the water development projects of the U.S. Army Corps of Engineers. The Corps of Engineers had its origins in the French engineers hired by George Washington in the American Revolution. For years the only school of engineering in the United States was the Military Academy at West Point, New York.

In 1879, Congress created the Mississippi River Commission to "prevent destructive floods." The Commission included civilians but the president had to be an Army engineer and the Corps of Engineers always had veto power over any decision by the Commission.

In 1936 Congress passed the Flood Control Act which contained the wording, "the Federal Government should improve or participate in the improvement of navigable waters or their tributaries, including watersheds thereof, for flood-control purposes if the benefits to whomsoever they may accrue are in excess of the estimated costs." The phrase if the benefits to whomsoever they may accrue are in excess of the estimated costs established cost-benefit analysis. Initially the Corps of Engineers developed ad hoc methods for estimating benefits and costs. It wasn't until the 1950s that academic economists discovered that the Corps had developed a system for the economic analysis of public investments. Economists have influenced and improved the Corps' methods since then and cost-benefit analysis has been adapted to most areas of public decision-making.

Key Analyses in Cost-Benefit Analysis:

They are discussed as under:

- **Risk Analysis:** Cost-benefit analysis must take into account the fact that circumstances may occur which result in future (actual) benefit and cost outcomes being different from expected values. This potential variance in outcomes (termed "risk") is a function of the chance that an actual value will differ from an expected value, and the associated consequences. Risks should be quantified (where possible) as the product of:
  - ➤ The likelihood of the risk impacting upon estimated project costs or benefits

> ➢ The consequence (i.e. the quantum difference between estimated and risk-adjusted values).

- **Financial Analysis:** The financial analysis, in itself, cannot present sufficient information for a decision on whether or not to proceed with a particular project. Many government projects, particularly those of a social nature, will not be financially viable in the sense that the project does not generate sufficient revenues (if any) to offset its costs. Even if a project's revenues do cover its costs, this is not in itself a sufficient reason to decide to proceed. For example, a project might generate revenue greater than its financial costs but cause a significant community detriment which does not have direct financial cost (e.g. air pollution). Such a case may create a loss of economic welfare, despite the project itself being financially viable. A cost-benefit analysis will include consideration of such factors. It is important to understand the distinction between financial analysis and an economic or cost-benefit analysis. Financial analysis considers the project options from an internal, financial perspective while the cost-benefit analysis looks at the overall impact of the project options on the economic welfare of the community. The financial model also forms the basis for determining the net budget impact associated with the proposal. The cost-benefit analysis builds on the financial analysis, with the addition of other impacts and benefits not directly captured or incurred by the government.

- **Economic Impact Analysis:** Cost-benefit analysis should not be confused with economic impact analysis which typically measures the impact of a project on the volume of economic activity in a region (e.g. on gross domestic product or employment), or a measure of welfare (e.g. changes in household consumption). For individual projects, economic impact analysis based on input-output modelling does not account for the impact of alternative projects which will also lead to increased output for a region.

   Benefits identified in economic impact analysis using an input-output approach should not be included in cost-benefit analysis for several reasons including:

   Although any project will generate economic activity, directly and indirectly, these effects could also be generated by an alternative use of the resources.

   Typically, in impact models based on input-output relationships, increased expenditure leads to increased output, and therefore

benefits. Alternatively, in cost-benefit analysis, increased expenditure represents increased costs

A local project can have a positive economic impact on a small region(at the expense of other regions) but this represents a distributional effect and does not usually create an increase in economic welfare for the overall community, unless the project activates otherwise idle economic resources

Analysis using input-output multipliers assumes that a new project can obtain unrestricted quantities of goods and labour without altering the pre-project market prices for these inputs, which would not be realistic in many cases.

While increases in gross domestic product generally enhance economic welfare, gross domestic product in itself is not a satisfactory measure of social welfare for evaluation of public sector projects, as it does not allow for the measurement of: externalities: non-market goods; and consumer surplus.

Economic impact analysis should generally be restricted to the evaluation of impacts of changes in economic policy (e.g. free trade agreements, tax reform) on economic activity indicators. In these cases, a general equilibrium approach rather than an input-output approach should be used.

- **Regulatory Analysis:** There will be instances where analysis undertaken in accordance with these guidelines will relate to proposals that include one or more options which have the potential to regulate economic or other activity in the community. Potential regulatory impacts should be identified.

Tourism Social Costs Benefits

They are social cost and social benefits.

Social Costs:

- May attract visitors whose lifestyles and ideas conflict with the community's. An example may be the visitors' use of drugs and alcohol.
- May change individual behaviour and family relationships.
- May lead to an increase in sexually transmitted diseases.
- Loss of traditional values and culture through imitation of visitor behaviour or cultural diffusion resulting from normal, everyday interaction.
- May create crowding and congestion.

- May compete with residents for available services, facilities, and existing recreation opportunities.
- May result in harassment of visitors perceived to be wealthy and an increase in crime.
- Can involve violations of human rights. People have been displaced from their land and beaches have been reserved for hotel guests while access is barred to local people.
- Tourism development of infrastructure (airports, roads, etc.) can cost the local government a great deal of money.
- May inflate property values and prices of goods and services.

Social Benefits:

- Brings in outside dollars to support community facilities and services that otherwise might not be developed.
- Encourages civic involvement and pride.
- Provides cultural exchange between hosts and guests.
- Encourages the preservation and celebration of local festivals and cultural events.
- Facilities and infrastructure developed for tourism can also benefit residents.
- Encourages the learning of new languages and skills.
- Tourism related funds have contributed towards schools being built in some areas.
- Helps diversify and stabilize the local economy.
- Provides governments with extra tax revenues each year through accommodation and restaurant taxes, airport taxes, sales taxes, park entrance fees, employee income tax etc..
- Creates local jobs and business opportunities. These include those jobs directly related to tourism (hotel and tour services) and those that indirectly support tourism (such as food production and housing construction).
- Brings new money into the economy. Tourist money is returned to the local economy as it is spent over and over again.
- Helps attract additional businesses and services to support the tourist industry.

Pros and Cons of Cost Benefit Analysis:

- **Pros of Cost Benefit Analysis:** The following are the pros for performing a cost-benefit analysis:

➢ **Generates a Calculated "Best Guess" to Determine Feasibility**: A cost-benefit analysis is really an estimate; however, it is important to be prepared. Costs would be easier to assess than the benefits forecasted; therefore, it is a merely an educated guess. The results from a cost-benefit analysis should give business owners, if every variable is entered correctly, enough data to make a decision with confidence.

➢ **Determines Affordability Today:** Depending on the business's cash flow the demands from additional costs could derail the company's cash position. Upon reviewing the costs required from the new venture being analyzed, business owners can determine their ability to reallocate resources or conclude if they are capable of securing financing with their current financial situation. The ability to afford the costs ongoing especially if the benefits is scheduled to occur in the future instead of instantly.

➢ **Potentially Discovers Unknown Variables:** When collecting the relevant data to facilitate a cost-benefit analysis additional variables may materialize in the review process. Unknown variables could aid the calculation to be more favourable or it could take away from it. Examples of unknown variables could include additional financing costs, sources of revenues, cost savings from price breaks, etc.

- **Cons of Cost Benefit Analysis:** The following are the cons for performing a cost-benefit analysis:
  ➢ **It May Not Factor Indirect Benefits:** It is difficult to assess indirect benefits and attach a corresponding cost or benefit towards it. Indirect benefits may include producing an output for social profit; however, it may be difficult to monetize the benefits from social profits. Other benefits may include cost savings in other areas of the business's operations that cannot easily be assessed today. Finally, there may be opportunities that are known but are not factored into the cost-benefit analysis, such as: increase in workplace safety, employee morale and retention, and overall knowledge.

  ➢ **Variables Might Be Biased:** Conducting a cost-benefit analysis could be ineffective if the variables are biased. It is possible for benefits to be overestimated from ambitious decision makers; however, if the bar is set too high the decision to move forward could be costly to the business. As well, assuming discounts will be offered from selected suppliers could be dangerous. Business

owners must be honest with the information they decided to choose to create a cost-benefit analysis.

➢ **Unknown Variables Might Significantly adds to Costs or Lower Benefits:** It is possible that variables are not considered or overlooked for the analysis. Realistically most cost-benefit analysis will not have the exact cost and benefit figures; however, there is a significant risk if certain variables are overlooked. Spend time to get as much information as possible and consider as many external factors as possible that could affect the costs and benefits.

6.4 CHECK YOUR PROGRESS - 1

6.4.1 Answer the following questions:

(a) Define Cost Benefit Analysis.

_____
_____
_____
_____
_____

(b) Write down the name of the key analyses which is done in the Cost Benefit Analysis.

_____
_____
_____
_____
_____
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(c) What are the pros of Cost Benefit Analysis?

_____
_____
_____
_____
_____
_____

6.4.2 Identify Whether True/False:

(a) Cost-benefit analysis looks at the overall impact of the project options on the economic welfare of the community.

(b) Financial analysis considers the project options from an internal, financial perspective.

(c) Loss of traditional values and culture through imitation of visitor behaviour comes under the category of social benefit.

(d) Cultural exchange between hosts and guests comes under the category of social cost.

6.5 SUMMARY

In this unit we have discuss about the meaning of cost benefit analysis, history of cost benefit analysis. The factors which are considered in cost benefit analysis is also been discussed in this unit. Social cost, benefit and pros and cons is also been explain in this unit. Cost-benefit analysis generally assesses the impact of a project on the economic welfare of the community, and is therefore a key element in any public sector cost-benefit analysis. By comprehensively identifying and estimating as many costs and benefits of a project as can reasonably be measured, including those which can be thought of as social and environmental, it is possible to rank project options according to their net economic benefit.

Cost Benefit analysis (CBA) is a technique for evaluating a project or investment by comparing the economic benefits with the economic costs of the activity. Cost benefit analysis has several objectives. First, cost benefit analysis can be used to evaluate the economic merit of a project. Second the results from a series of benefit-cost analyses can be used to compare competing projects. Cost benefit analysis can be used to assess business decisions, to examine the worth of public investments, or to assess the wisdom of using natural resources or altering environmental conditions. Ultimately, cost benefit analysis aims to examine potential actions with the objective of increasing social welfare.

Social cost-benefit analysis is a systematic and cohesive method to survey all the impacts caused by developing a project. It comprises not just the financial effects (investment costs, direct benefits like tax and fees, etc), but all the social effects, like: pollution, safety, indirect (labour) market, legal aspects, etc. but all the social effects, like: pollution, safety, indirect (labour) market, legal aspects, etc. The main aim of a social cost-benefit analysis is to attach a price to as many effects as possible in order to uniformly weigh the above-mentioned heterogeneous effects. As a result, these prices reflect the value a society attaches to the caused effects, enabling the decision maker to form a statement about the net social welfare effects of a project. A major advantage of a social cost-

benefit analysis is that it enables investors to systematically and cohesively compare different project alternatives.

6.6 GLOSSARY

- **Alternatives-** Various options available in evaluating a particular project is called alternatives.
- **CBA**- Cost Benefit Analysis.
- **Cons**- Loss, consequences.
- **Pros**- Useful, Beneficial, profit
- **Tourism**- It is a kind of activity concern with the movement of people takes place.

6.7 ANSWER TO CHECK YOUR PROGRESS1

6.4.1 Answer the following questions:

(a) Cost Benefit analysis (CBA) is a technique for evaluating a project or investment by comparing the economic benefits with the economic costs of the activity. Cost-benefit analysis is a formal analysis of the impacts of a measure or programme, designed to assess whether the advantages (benefits) of the measure or programme are greater than its disadvantages (costs). Cost-benefit analysis is one of a set of formal tools of efficiency assessment. Efficiency assessment refers to analyses made for the purpose of identifying how to use scarce resources to obtain the greatest possible benefits of them. Cost-benefit analysis is a technique which is based on welfare economics.

(b) Risk analysis, financial analysis, Economic Impact analysis, Regulatory analysis.

(c) Generates a Calculated "Best Guess" to Determine Feasibility: A cost-benefit analysis is really an estimate; however, it is important to be prepared. Costs would be easier to assess than the benefits forecasted; therefore, it is a merely an educated guess.

Determines Affordability today: Depending on the business's cash flow, the demands from additional costs could derail the company's cash position. Upon reviewing the costs required from the new venture being analyzed, business owners can determine their ability to reallocate resources or conclude if they are capable of securing financing with their current financial situation. The ability to afford the costs ongoing especially if the benefits is scheduled to occur in the future instead of instantly.

Potentially Discovers Unknown Variables: When collecting the relevant data to facilitate a cost-benefit analysis additional variables may materialize in the review process. Unknown variables could aid the calculation to be more favourable or it could take away from it. Examples of unknown variables could include additional financing costs, sources of revenues, cost savings from price breaks, etc.

6.4.2 Identify Whether True/False:

(a) True
(b) True
(c) False
(d) False

6.8 REFERENCES

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- Economic Impact of Tourism development An Indian Experience: Chattopadhyay, K.
- Introduction to Tourism: Khan, M.A.
- Travel and Tourism Management: Singh, S.P.

6.10 TERMINAL QUESTIONS

1. Discuss in detail the meaning of Cost Benefit Analysis.
2. Explain the key analyses in the Cost Benefit Analysis of a tourism project.
3. Describe in detail the Tourism Costs benefits in Indian context.
4. Discuss various Pros and Cons of Cost Benefit Analysis.

UNIT 7: CULTURAL ENVIRONMENT AND TOURISM

STRUCTURE:

7.1   Introduction

7.2   Objectives

7.3   Cultural Environment and Tourism

7.4   Check Your Progress-1

7.5   Summary

7.6   Glossary

7.7   Answer to Check Your Progress- 1

7.8   References

7.9   Suggested Readings

7.10 Terminal Questions

7.1 INTRODUCTION

In the previous unit, you have learnt about the meaning of Cost Benefit Analysis, history of Cost Benefit Analysis and also the key analyses in Cost Benefit Analysis. Tourism costs benefits is also been discussed in the previous unit. Various pros and cons of Cost Benefit Analysis is also been explained. But in this unit you will study about the meaning of culture, cultural environment and also the relationship between cultural environment and tourism. This unit will also cover the impact of tourism cultural environment on.

Culture is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society. Culture refers to the cumulative deposit of knowledge, experience, beliefs, values, attitudes, meanings, hierarchies, religion, notions of time, roles, spatial relations, concepts of the universe, and material objects and possessions acquired by a group of people in the course of generations through individual and group striving. So now if we take into consideration cultural tourism these groups will constitute on the demand side on the one hand those tourists who are possessing cultural motivation during their travel and on the other hand from the supply side

the destination which is disposing those attraction which are capable to desire the attraction of a culturally motivated tourists or visitor.

Tourism is a global industry of great economic importance, driven by our human desire to experience new environments, be it the natural environment of a tropical beach or the built environment of an old city.

7.2 OBJECTIVES

After studying this unit you will able to learn:-
- Meaning of Culture
- Relationship between Cultural Environment and Tourism
- Impact of Tourism on Cultural Environment

7.3 CULTURAL ENVIRONMENT AND TOURISM

Meaning of Culture:

Culture is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society.

Culture refers to the cumulative deposit of knowledge, experience, beliefs, values, attitudes, meanings, hierarchies, religion, notions of time, roles, spatial relations, concepts of the universe, and material objects and possessions acquired by a group of people in the course of generations through individual and group striving. Culture refers to the following Ways of Life.

- **Language:** The oldest human institution and the most sophisticated medium of expression.
- **Arts & Sciences:** The most advanced and refined forms of human expression.
- **Thought:** The ways in which people perceive, interpret, and understand the world around them.
- **Spirituality:** The value system transmitted through generations for the inner well-being of human beings, expressed through language and actions.
- **Social activity:** The shared pursuits within a cultural community, demonstrated in a variety of festivities and life-celebrating events.
- **Interaction:** The social aspects of human contact, including the give-and-take of socialization, negotiation, protocol, and conventions.

   Thus, in simple word it can be said that the culture is part of the lifestyle which a multitude of people are sharing. The similarities in

spoken and written language, behaviour, lifestyle, customs, heritage, ideology and even technology connect the individuals to groups of people in a certain culture. Culture creates authenticity and distinctiveness in the global tourism market. In this regard, "tourism experiences" that can connect people and visitors to local cultures are very important. In many cases, the theme of destinations is also linked to specific cultural events (e.g. connected to famous places, people or historical events) which can also play a catalyst role in this development. The involvement of the local communities is an important factor for visitor satisfaction and a prerequisite for product development. Local communities are not just the hosts for tourism, but they are also participating directly in the tourism experience, helping to define the sense of place and atmosphere of regions.

Relationship between Cultural Environment and Tourism:

Tourism is a global industry of great economic importance, driven by our human desire to experience new environments, be it the natural environment of a tropical beach or the built environment of an old city. But uncontrolled development and business operations can lead to some major negative consequences like pollution, loss of biodiversity, economic inequality, and unsuitable cultural change. Recognizing and attempting to reconcile these often competing social, economic, and environmental imperatives that accompany tourism is a central focus of our program. Culture and tourism have a mutually beneficial relationship which can strengthen the attractiveness and competitiveness of regions and countries.

Culture is increasingly an important element of the tourism product, which also creates distinctiveness in a crowded global marketplace. At the same time, tourism provides an important means of enhancing culture and creating income which can support and strengthen cultural heritage, cultural production and creativity. Creating a strong relationship between tourism and culture can therefore help destinations to become more attractive and competitive as locations to live, visit, work and invest in. During most of the 20th century, tourism and culture were viewed as largely separate aspects of destinations.

Cultural resources were seen as part of the cultural heritage of destinations, largely related to the education of the local population and the underpinning of local or national cultural identities. Tourism, on the other hand, was largely viewed as a leisure-related activity separate from everyday life and the culture of the local population. This gradually

changed towards the end of the century, as the role of cultural assets in attracting tourists and distinguishing detestations from one another become more obvious.

The growing articulation between culture and tourism was stimulated by a number of factors:

Demand:

- Increased interest in culture, particularly as a source of identity and differentiation in the face of globalisation.
- Growing levels of cultural capital, stimulated by rising education levels.
- Aging populations in developed regions.
- Postmodern consumption styles, emphasising personal development rather than materialism.
- A desire for direct forms of experience ("life seeing" rather than sightseeing).
- Growing importance of intangible culture and the role of image and atmosphere.
- Increased mobility creating easier access to other cultures.
- Supply:
- Development of cultural tourism to stimulate jobs and income.
- Cultural tourism was seen as growth market and "quality" tourism.
- An increasing supply of culture as a result of regional development.
- The growing accessibility of information on culture and tourism through new technologies.
- The emergence of new nations and regions eager to establish a distinct identity.
- A desire to project the external image of regions and nations.
- Cultural funding problems related to increasing cultural supply.

As a result, culture has been increasingly employed as an aspect of the tourism product and destination imaging strategies, and tourism has been integrated into cultural development strategies as a means of supporting cultural heritage and cultural production. This synergy between tourism and culture is seen as one of the most important reasons for encouraging a more direct relationship between these two elements. This relationship is even more significant, given the growing importance of both tourism and culture for economies around the globe. It is clear that tourism and culture have become increasingly closely linked as their role in regional attractiveness and competitiveness has become clearer. Culture in all its forms is likely to feature strongly in the tourism product and

promotion of most regions, even those which have traditionally relied on their natural assets, such as sun and beach or mountains, for their attractiveness. Destinations are also trying to increase their comparative advantage by adding to their stock of cultural attractions (e.g. building new museums or heritage centres). They are also trying to develop their intangible culture and creativity (e.g. selling "atmosphere", cultural events and gastronomy). Increasingly, destinations are also developing competitive advantage in culture and tourism through new forms of organisation and marketing. For example, local communities are beginning to come together to develop cultural products for tourism rather than competing directly with one another.

Impact of Tourism on Cultural Environment:

• **Demonstration Effect:** Demonstration effect is defined as changes in attitudes, values or behaviour which can result from merely observing and imitating tourists. This may be advantageous or disadvantageous to the host community. Tourists to developing countries especially if they come from very different societies introduce and display a very foreign way of life to the host population. This may be positive when it stimulates certain behaviours or inspires people to work for things they lack. More commonly, it is detrimental and causing discontent and resentment among local people especially in developing countries because if the lack of wealth to satisfy these desires. The demonstration effect has also economic implication. Local people often tend to initiate the rich person that changes the pattern of consumption from local product to western products. Local people may turn illegal means to obtain the wealth they desire, this crime rate may increase as a result of tourism in a destination.

The demonstration effect has the greatest influence on young people and may create generation gaps and class difference between the young generations with those who wish to retain the traditional way of life. The young especially the educated tend to migrate. The young people want material side of modern life but fail to see the negative effects – such as stress, unemployment, and environmental degradation. This type of changes may be a disruptive force to traditional kinship overtime.

• **Acculturation:** Many impacts of tourism appear relatively quickly while others tend to manifest themselves more gradually. Cultural changes falls into this last category and overtime, more long-term cultural change may result from tourism. The external influences and the evolution of society results change, regardless of the existence tourism. The enhanced

networks of communication, technology and emergency of global market are all part of this process. The infiltration of western culture into less developed countries is viewed as problematic. The attitudes, behaviour pattern; expenditure pattern may not be easily adapted from one culture to another.

International tourism is thought to influence socio cultural change through the process of acculturation. The theory of acculturation rests on the view that contact between cultures results in sharing and adoptions of one another's values and attitudes. A major concern is that when a culturally weak society comes into contact with a strong one, the process will be one way, that is the values and attitudes of the strong nation are transferred to the weak nation. Thus acculturation is more pronounced in less developed countries. Particularly those have had less contact with western society in the past. Tourism induced acculturation may be difficult to disentangle from wider cultural change.

There are two arguments on the cultural impact of tourism:

- Tourism results in the transformation of cultural events into commercialised products.
- Tourism results in preservations and revitalisation of traditional culture practices by providing financial support engendering community pride contributing positively to the goals of sustainable tourism.

Communication between Cultures: There has been much studies conducted to investigate tourism role in communication between cultures, its effect on the physical products of culture such as crafts and arts and influence on custom and ceremony in the host society.

Cross-cultural contact arising from tourism is thought to be functions at least 3 factors.

Type of tourist the different categories of tourists in the third world are reflected on expected differences in their kind of interaction with local people.

Context in which the contact takes place. Clearly things such as length of stay, the environment under which the contact occurs, and language ability will help to determine the depth of communication, which takes place.

The role of cultural brokers, who are intermeddling occupational group such as interpreters and guide who are the conduct through which much of contacts occurs their activities are thought to have a considerable

effect and on the manner and speed with which new ideas and influences are transmitted.

Tourism and Physical Culture: One of the obvious sign of cultural reawakening is to be found in the state of traditional art forms in third world society. The growth of tourists' handicrafts market has stimulated local production in both positive and negative directions. Positive influence may be found in the financial success traditional artefacts production in many places. On the other hand, the total pressure caused by a ready market for handicrafts has also lead to fall in the quality of workmanship and manufacture of cheap limitation known as airport art.

Effects of Tourism on Local Customs: Tourism has the ability to market its products as a commodity, part of which consists of promoting the cultural attractions of holidaying in an exotic environment. Although this process is criticised cheeping cultural events such as religious ceremonies, it is also responsible for the flow of funds into many local activities.

7.4 CHECK YOUR PROGRESS- 1

7.4.1 Answer the following questions:

(a) Define the term Culture.

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_____
_____

(b) Write a short note on the relationship between Cultural environment and Tourism.

_____
_____
_____
_____

(c) What do you mean by Demonstration Effect? Explain.

_____
_____
_____
_____

7.4.2 Fill In The Blanks:

1. _____ is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society.

2. _____ and culture have a mutually beneficial relationship.

3. Changes in attitudes, values or behaviour which can result from merely observing and imitating tourists is called_____

4. _____ results in the transformation of cultural events into commercialised products.

7.5 SUMMARY

In this unit we have discuss about the meaning of culture and relationship between cultural environment and tourism. Various impact of tourism on cultural environment is also been explain. Culture is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society. Culture refers to the cumulative deposit of knowledge, experience, beliefs, values, attitudes, meanings, hierarchies, religion, notions of time, roles, spatial relations, concepts of the universe, and material objects and possessions acquired by a group of people in the course of generations through individual and group striving. Culture and tourism have a mutually beneficial relationship which can strengthen the attractiveness and competitiveness of regions and countries. Culture is increasingly an important element of the tourism product, which also creates distinctiveness in a crowded global marketplace. At the same time, tourism provides an important means of enhancing culture and creating income which can support and strengthen cultural heritage, cultural production and creativity. Creating a strong relationship between tourism and culture can therefore help destinations to become more attractive and competitive as locations to live, visit, work and invest in. The demonstration effect has the greatest influence on young people and may create generation gaps and class difference between the young generations with those who wish to retain the traditional way of life. The young especially the educated tend to migrate. The young people want material side of modern life but fail to see the negative effects – such as stress, unemployment, and environmental degradation. This type of changes may be a disruptive force to traditional kinship overtime.

7.6 GLOSSARY

- **Adaptive**- Make or become suitable for new use or purpose
- **Diversify** - Expand
- **Demonstration**- Expression, Display, Show.

- **Expenditure**-Expenses, Spending

7.7 ANSWER TO CHECK YOUR PROGRESS 1

7.4.1 Answer the following questions:

(a) Culture is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society.

Culture refers to the cumulative deposit of knowledge, experience, beliefs, values, attitudes, meanings, hierarchies, religion, notions of time, roles, spatial relations, concepts of the universe, and material objects and possessions acquired by a group of people in the course of generations through individual and group striving.

(b) Culture and tourism have a mutually beneficial relationship which can strengthen the attractiveness and competitiveness of regions and countries. Culture is increasingly an important element of the tourism product, which also creates distinctiveness in a crowded global marketplace. At the same time, tourism provides an important means of enhancing culture and creating income which can support and strengthen cultural heritage, cultural production and creativity. Creating a strong relationship between tourism and culture can therefore help destinations to become more attractive and competitive as locations to live, visit, work and invest in.

(c) Demonstration effect is defined as changes in attitudes, values or behaviour which can result from merely observing and imitating tourists. This may be advantageous or disadvantageous to the host community. Tourists to developing countries especially if they come from very different societies introduce and display a very foreign way of life to the host population. This may be positive when it stimulates certain behaviours or inspires people to work for things they lack. More commonly, it is detrimental and causing discontent and resentment among local people especially in developing countries because if the lack of wealth to satisfy these desires.

7.4.2 Fill In The Blanks:

- **(a)** Culture
- **(b)** Tourism
- **(c)** Demonstration Effect
- **(d)** Tourism

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7.9 SUGGESTED READINGS

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3. International Tourism Fundamentals & Practices: Bhatia, A.K.
4. Travel and Tourism Management: Singh, S.P.

7.10 TERMINAL QUESTIONS

1. Discuss in detail the relationship between Cultural Environment and Tourism.
2. Explain the impact of Tourism on Cultural Environment.
3. Briefly explain the term "Culture" in context of Tourism Industry.

UNIT 8: DIRECT, INDIRECT AND INDUCED IMPACTS OF TOURISM ON DESTINATION ECONOMY

STRUCTURE:

8.1   Introduction

8.2   Objectives

8.3   Direct, Indirect, and Induced Impacts of Tourism on Destination Economy

8.4   Check Your Progress-1

8.5   Summary

8.6   Glossary

8.7   Answer to Check Your Progress- 1

8.8   References

8.9   Suggested Readings

8.10 Terminal Questions

8.1 INTRODUCTION

In the previous unit, you have learnt about the meaning of Culture and relationship between Cultural Environment and Tourism. Impact of tourism on Cultural environment is also been explain in the previous unit. However, in this unit you will study about the meaning of destination, benefit and also various factors affecting destination. This unit will also cover the direct, indirect and induced impacts of tourism on destination economy as well as the local community.

One of the most frequently used words in tourism is 'destination', but different actors use it very differently. This raises the question if it is at all meaningful to continue working with it, because the word spreads confusion rather than brings clearness because there seemingly is some systematically self-contradictions in the use of the word. Such as, the destination as a narrative or as an attraction or as a geographical unit or as an empirical relationship or as a marketing object or as a place where tourism happens. At a destination, there is a mix of interdependent elements. The elements are interdependent, because in order to produce a satisfying vacation experience, all elements must be present. The

destination is composed of attraction it is the sum of interests, activities, facilities, infrastructure and attractions create the identity of a place.

8.2 OBJECTIVES

After studying this unit, you will able to learn:

* Meaning of Direct Impact
* Meaning of Indirect Impact
* Meaning of Induced Impact
* Meaning of Destination
* Benefits of Tourist Destination
* Factors Influencing Tourist Destination
* Impact of Tourism on Destination Economy

8.3 DIRECT, INDIRECT AND INDUCED IMPACTS OF TOURISM ON DESTINATION ECONOMY

* **Meaning of Direct Impact:** It is concerned with the expenditure within the tourism sector, based on a list of typical tourism products drawn up by the (UNWTO) and the Organization for Economic Cooperation and Development (OECD). The direct impact is also called the direct multiplier Impact

* **Meaning of Indirect Impact:** It is concerned with the intermediate consumption for the production of goods and services in the tourism sector. These are goods and services that tourism companies purchase from their suppliers, forming the tourism supply chain. Indirect effects can be particularly important for the production of local products. So-called frontline companies take the initial purchasing decisions that determine what visitors can consume. For example, if a frontline accommodation provider decides to buy local products wherever possible, the tourist will be the originator of the purchase and of the production of goods and services in the host country. It is therefore important to be able to encourage the tourism sector to procure locally produced goods and services in order to maximise the economic impact of tourism revenue in a country or region.

* **Meaning of Induced Impact:** Employees from wages paid by companies in direct contact with tourists concern it with the expenditure. Induced effects also include the consumption of companies that have benefited directly or indirectly from initial expenditure in the tourism sector. An example of such induced effects would be purchases of consumer goods such as food, clothing and electronic goods by people

employed in the hotel sector. For companies, this would be purchases of capital goods or expenditure related to the reinvestment of profits.

- **Meaning of Destination:** One of the most frequently used words in tourism is 'destination', but different actors use it very differently. This raises the question if it is at all meaningful to continue working with it, because the word spreads confusion rather than brings clearness because there seemingly is some systematically self-contradictions in the use of the word. Such as the destination as a narrative or as an attraction or as a geographical unit or as an empirical relationship or as a marketing object or as a place where tourism happens.

At a destination, there is a mix of interdependent elements. The elements are interdependent, because in order to produce a satisfying vacation experience, all elements must be present. The destination is composed of attraction it is the sum of interests, activities, facilities, infrastructure and attractions create the identity of a place. It has a static dimension – the place – and a dynamic dimension – the mix and agglomeration of agents and products/services, varying with the tourists' historically different demand.

Multi-aspects including qualitative and structural transformations accompany development of tourism. The recent geopolitical changes made in different regions of the world have had a great influence on the scale and structure of tourism. The downfall of communism and democratisation of societies in former socialist countries are events that have an impact on modern tourism, and other parts of the world have witnessed similar processes within their societies. The development of international tourism will take on new dynamic and important changes in spatial structures. An increase in share of the tourist structure shows no connection with an increase in share of the profit structure. There is no guarantee of an even distribution in the benefits of tourism.

Benefits of Tourist Destination: It is not hidden that tourism is among India's important export industries. Even with comparatively low levels of international tourist traffic, tourism has already emerged as an important segment of the Indian economy. Tourism also contributed to the economy indirectly through its linkages with other sectors like horticulture, agriculture, poultry, handicrafts and construction.

Tourism provides a major economic development opportunity for many countries and a means of improving the livelihoods of its residents. Both the public and private sectors involved in tourism depend on planning to achieve sustainable tourism development that respects the local

community, creates appropriate employment, maintains the natural environment, and delivers a quality visitor experience. However, many tourism destinations have pursued development without proper planning and without considering the many impacts such development will bring to the community. This session will discuss tourism planning approaches to achieve the goals and objectives of tourism development for a destination. For the purposes of discussion, a tourism destination can mean an entire country, a region, an island, a resort area, or a single project. The tourism plan is generally a formal document to guide both public sector and private sector development activities. Destination planning includes many different forms of planning such as economic development planning, land use planning, infrastructure planning, and social services planning and involves many groups with different perspectives including governments, private investors and developers, and local communities.

Factors Influencing Tourist Destination: The end of the twentieth century was a time of great transformation in all fields of life. There were many fast-paced changes throughout social conditions, the economy, and technology, which brought about many transitions within tourism. The constant tendencies to observe and gain knowledge about the markets basic condition are needed to succeed with each activity and the trends within tourism can change quickly.

The ability to forecast and stimulate these developmental processes is the key to making the correct decisions for the future. The competition within the tourist market not only requires constant observation and the ability to anticipate change, but also being able to react to the new trend before it becomes the norm. This shows the importance of knowledge in the action of these megatrends, which can be classified into six basic groups; demographics, politics, social and cultural, economics, technology, and ecology. In each of these groups there are positive factors, which will either stimulate or deter the development of tourism, each with variability in strength and effect. These constituents will decide about the dynamics and expansion of tourism with the difficulty being verification. These factors, especially demographics, social, cultural, ecology, and technology hold a strong influence on the maturation of tourism.

As part of the wider economic and social system, tourism is affected by system developments and dynamics. Consequently, the factors that will affect socioeconomic development in the future include – among others – those that will affect tourism development. The

development stage for each tourism destination, combined with the general competitiveness of the economy surrounding it, creates a different intensity and form of influence. In any case, there is a minimum number of factors that will affect all tourism destinations in the future.

One of the most significant is the intense segmentation of the mass market. There is no longer one mass market for leisure time, but a number of 'discrete mass markets' and increasing specialization, resulting in a variety of distinct traffic flows, often moving in different directions. During the recession of the early 1990s when packaged travel fell substantially and US travel to Europe suffered catastrophic decline, total movement in many areas and many resorts did not diminish. Package travel was replaced by individual travel.

New tourism flows replaced the absent American visitors. Determinants of demand are the fundamental factors governing the market and together represent the market forces which control destinations and industry services. They are made up of demographic, economic and social influences. These shape consumer preferences, which govern the demand for travel attractions, and the special satisfactions at the destination. On the supply side, industry responds through product development and price.

The factors that affect the tourist destination are as follows:

• **Demographic Trend:** The major world tourism markets in the older industrialized countries, Europe and North America, are affected by major changes, principally the increase in the proportion of older people in the population and a corresponding reduction in children, younger people, and in the active population making up the labour force. Such changes have both good and bad effects on tourism flows. The situation may well alter in the future, but demographic influences by their nature are longer term in their impacts.

• **Economic Influence:** New emerging industrialized countries benefit from new technology, which represents a second industrial revolution. They can and do become rich very quickly; for example, Japan has a massive balance of payments and export surplus, whereas the USA and Britain have had large deficits. In recent years a number of European countries have greatly increased wealth and standard of living, e.g. Germany, but also Spain, Portugal and Ireland. Again, Britain has lost out, falling behind in relative position. There has been a correlation in the past between GDP and tourism expenditure which in industrialized countries may rise at twice the GDP rate of increase. Economic and trade effects

can have major and sometimes volatile impacts on tourism flows, as inflation and variations in exchange rates influence travel movement to a major extent. These influences and instabilities are likely to be a feature of future expansion.

• **Social and Life Style Changes:** In the principal tourism markets the population, and especially the 'travelling population', have increased their personal disposable income very considerably in recent years. They are more mobile, take more frequent trips and travel farther away from home. A growing and substantial number are sophisticated travellers. New aspirations or objectives intravel, leading to intense segmentation and specialization, has altered seasonal patterns and type of services demanded, notably an increasing insistence on quality. Substantial benefits for the industry follow major improvements in seasonal flow and such improvements can continue as marketing expertise improves. But destinations in demand have altered. For some, the tide is going out, presenting great difficulties for the local trades and infrastructure.

• **Climate Change:** Climate change is indeed a highly significant issue for the global tourism industry: less acute than wars and terrorism, but larger scale and longer lasting. The subsectors of the tourism industry most affected by climate change will be smaller fixed-site operators or destinations that rely heavily on a single natural attraction - such as snow, reefs or wildlife - that happens to be particularly susceptible to climate change. Even in these cases, however, there are opportunities to re-position either the product or the target market segment to maintain revenue. The key in these cases will be forethought and innovation, to maintain a competitive position as corresponding adjustments occur worldwide.

IMPACT OF TOURISM ON DESTINATION ECONOMY

• **Economic Impact:** Tourism alters the economic structure of a destination. The economic impact of tourism is the subject of analysis at two ways. One is generally positive about industry prospects while other is negative. Tourism is a major element of sources of capital and income to the local people. The economic significance of tourism activity is taking place, but also by the type and nature of economy being considered. Tourists spend their money on a wide variety of goods and services and related tourism products. The economic impacts of tourism more is known about the economic benefits of tourism than the associated costs. Tourism can create employment opportunities, earn foreign exchange, produce

return on investment for emerging economics, bring technology and improve standard of living. Tourism can also help to generate jobs and increase revenue to local people and shopping facilities. Tourism can cause major effect on economics of destination area for price of land to rise rapidly. Tourism development has often received support from the government and local residents. Therefore, for the sustainable development of tourism one should take balanced view towards the economic impacts of tourism that assess both the benefits and cost of tourism development.

Here, the economic impact of tourism development on destination is understood at the local level and mostly to understand the present status of tourism development. Tourism is encouraged at the local level due to ability to generate employment in hotels, resorts, restaurants, cottages, parks, transport operators, travel agents, entertainment and local business. Also change their lifestyle and it provides support to the other sectors of the economy. The economic impact of tourism has been commonly be viewed as a positive force which increases total income for the host country, direct and indirect employment and tax revenues; it also stimulates secondary economic growth. Economist consider the tourism as an "basic income" from tourism, it helps to pay for goods and services, imported from other regions and contribution to government revenues through taxes, that can be used to develop community and infrastructural facilities and service to asset in general economic development.

- **Socio Cultural Impact:** The social and cultural impacts of tourism are the way in which tourism is contributing to change in value system, individual behaviour, family relationship, life style, safety level, moral conduct, religion, language, interpersonal relationship at the destination. These social impacts affect on the local people of host communities of their direct and indirect association with tourists. Firstly, tourist purchase some goods or services from the local people. Secondly, tourist and local people find themselves side by side and thirdly tourists come face to face with the object of exchanging information and ideas. This third situation is more important for international understandings. However, the first two are common. The tourist is mobile, relaxed, free spending, enjoying the leisure and absorbing the experience of being in a different places whereas the local people are stationary and employed in the tourist industry, spend a large portion of the time for needs and desire of visitors. The demonstration effect is also an aspect of the direct social impact of tourism. Tourist influences the behaviour of the host population. The local

people tend to observe and learn the life style of the richer visitors from affluent societies and try to emulate their way of life. However, expansion of tourism, cause cultural commercialization, increase in crime rate, gambling, drug abuse, prostitution is common. Thus impacts of tourism on traditional life styles are important, where these traditions are considered from the basis of the tourism development.

The impacts of tourism mainly depend on tourist and destination factors. The tourist factors are those, which tourists bring to the destination, it includes demographic characteristics, social differences and number of visitors. Destination factor are those that are part of the destination itself. It includes travel linkage and circulation, local acceptance of tourism and local vitality and leadership. In respect of social impacts of tourist destination there is a problem by host, which are of different ways such as positive and negative impacts. The number of tourist remains below this critical level because of economic impact is positive. Mostly the presence of tourist in the destination area is welcoming and accepted by majority of local people. The attitude of the host people towards the tourism development may unfold through apathy, irritation and potentially antagonism, when anti-tourist attitude begin gaining among host of people, when the carrying capacity is over which is known as peak point. Because, due to the tourist arrival the size of the local population and their facilities and services are congested. Therefore, over use of the infrastructure ultimately affects the destination lifestyle on the tourists also shy away from a degraded destination.

- **Physical Impact:** Physical impact of tourism needed careful consideration as impacts can influence a community either positively or negatively. Tourism can create great pressure on local resources like energy, food and other raw materials. Greater extraction and transport of these resources exacerbates the physical impacts associated with the exploitation. Physical congestion experienced at the destination, increasing demand for natural resources and contributes to the source of solid waste residual which creates the problem of air pollution, water and noise pollution, degradation of environmental factors, development of construction for accommodation, parking, water supplies, restaurants and recreational facilities. Therefore, the physical impacts are on the local communities of their direct and indirect association with the tourists. Generally, tourist generate a great deal of waste, tourist on expedition leave behind their garbage, toilet papers, plastic bags, cups, wastage of food, such practices degrade the environment. Physical impacts are

caused not only by tourism but by continuing tourist activities and long term change in local economics and ecologies. Many types of physical or cultural indicators may be generated by tourism development, however tourism is well planned. Developed and managed it may also generate positive impacts. Improvement that help tourism like better transportation and communication, tree planting, restoration of historic sites, holly places, urban beautification and cleanliness, also improve the physical factors for the local population. Tourism development can help to stimulate general community improvement.

8.4 CHECK YOUR PROGRESS- 1

8.4.1 Answer the following questions:

(a) Define the term Destination.

_____

_____

_____

(b) What do you mean by Induced Impact?

_____

_____

_____

8.4.2 Identify Whether True/False:

(a) Induced impact is concerned with the expenditure by employees from wages paid by companies in direct contact with tourists.

(b) Direct Impact is concern with the intermediate consumption for the production of goods and services in the tourism sector.

(c) Destination is a mixture of dependent elements.

(d) Destination provides employment to the people.

8.5 SUMMARY

In this unit we have discuss about the meaning of direct, indirect and induced impact. Meaning of destination, benefits of destination and various factors affecting destination is also been defined. Impact of tourism on destination economy is widely covered in this unit.

One of the most frequently used words in tourism is 'destination', but different actors use it very differently. This raises the question if it is at all meaningful to continue working with it, because the word spreads confusion rather than brings clearness because there seemingly is some systematically self-contradictions in the use of the word. Such as, the destination as a narrative or as an attraction or as a geographical unit or

as an empirical relationship or as a marketing object or as a place where tourism happens.

Indirect impact is concerned with the intermediate consumption for the production of goods and services in the tourism sector. These are goods and services that tourism companies purchase from their suppliers, forming the tourism supply chain. Indirect effects can be particularly important for the production of local products. So-called frontline companies take the initial purchasing decisions that determine what visitors can consume.

8.6 GLOSSARY

- **Demography:** It is related with population age sex etc.
- **Demonstration:** Expression, Display, Show.
- **Destination:** It is concern with area where attraction is located.
- **Environment:** Area just above the earth surface.
- **OECD: O**rganization for Economic Cooperation and Development **Service:** It is the facility that satisfies the need.
- **Tourism**: It is a kind of activity concern with the movement of people takes place.
- **UNWTO**: United Nation World Tourism Organisation

8.7 ANSWER TO CHECK YOUR PROGRESS1

8.7.1 Answer the following questions:

(a) The destination is composed of attraction it is the sum of interests, activities, facilities, infrastructure and attractions create the identity of a place. The elements are interdependent, because in order to produce a satisfying vacation experience, all elements must be present.

(b) Induced Impact is concerned with the expenditure by employees from wages paid by companies in direct contact with tourists. Induced effects also include the consumption of companies that have benefited directly or indirectly from initial expenditure in the tourism sector. An example of such induced effects would be purchases of consumer goods such as food, clothing and electronic goods by people employed in the hotel sector. For companies, this would be purchases of capital goods or expenditure related to the reinvestment of profits.

8.7.2 Identify Whether True/False:

1. True
2. False

3. False

4. True

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* Travel and Tourism Management: Singh, S.P.
* Managing Tourist Destination: Karma, K.K.
* Tourism Economic and Social Development: Gill, P.S.

8.10 TERMINAL QUESTIONS

1. Discuss in detail the term Destination and benefits of Tourist Destination.

2. Describe the Economic impact of Tourism on Destination Economy.

3. Discuss Socio- cultural impact of Tourism on Destination.

4. Discuss the Physical impact of Tourism on Destination.

UNIT 9: SIGNIFICANCE OF DESTINATION ECOLOGY AND ENVIRONMENT IN SUSTAINED DEVELOPMENT OF TOURISM

STRUCTURE:

9.1 Introduction

9.2 Objectives

9.3 Ecology and Environment

9.4 Sustainable development

9.5 Tourism destination

9.6 Sustainable development of tourism

9.7 Significance of destination ecology and environment in sustained development of tourism

9.8 Summary

9.9 Expected Questions

9.10 References

9.1 INTRODUCTION

In this unit, we are going to learn about the keywords ecology and environment. We will try to understand the concepts and meanings of ecology and environment. After that, the concept of sustainable development will discuss to know about the phenomenon of the sustainable development. The definition and meaning of tourism destination will discuss afterwards to know about the meaning of the keyword tourism destination. Then, the interlinking between tourism and sustainable development will discuss. At last, the significance of ecology and environment will discuss to understand their inter-linking among these keywords.

9.2 OBJECTIVES

After studing this unit learner will be able to:

- To understand the meaning of ecology and environment
- To know and understand the concept of sustainable development

- To understand the term "tourism destination"
- To know the concept of sustainable development of tourism
- To explain the significance of destination ecology and environment in sustained development of tourism

9.3   ECOLOGY AND ENVIRONMENT

Ecology:

The term "Ecology" was coined by Earnst Haeckel in 1869. It is derived from the Greek words Oikos (means "home") + logos (means "study"). Now ecology is often defined as ''the study of ecosystems''. So ecology deals with the study of organisms in their natural home interacting with their surroundings. The surroundings or environment consists of other living organisms (biotic) and physical (abiotic) components. Modern ecologists believe that an adequate definition of ecology must specify some unit of study and one such basic unit described by Tansley (1935) was ecosystem. "An ecosystem is a self-regulating group of biotic communities of species interacting with one another and with their non-living environment exchanging energy and matter."

An ecosystem is an integrated unit consisting of interacting plants, animals and micro-organisms whose survival depends upon the maintenance and regulation of their biotic and abiotic structures and functions. The ecosystem is thus, a unit or a system which is composed of a number of sub-units that are all directly or indirectly linked with each other. They may be freely exchanging energy and matter from outside — an open ecosystem or may be isolated from outside in term of exchange of matter— a closed ecosystem. Ecosystems show large variations in their size, structure, composition etc. However, all the ecosystems are characterized by certain basic structural and functional features which are common. Composition and organization of biological communities and abiotic components constitute the structure of an ecosystem. Thus, ecosystems have basically two types of components, the biotic and abiotic, as described below:

1. Biotic components
2. Abiotic components

1. Biotic components: Different living organisms constitute the biotic component of an ecosystem and belong to the following categories:

- Producers
- Consumers

- Decomposers

- **Producers:** These are mainly producing food themselves e.g., Green plants produce food by photosynthesis in the presence of sunlight from raw materials like water and carbon dioxide. They are known as photo-autotrophs (auto = self, photo = light, troph = food).

    There are some chemos - autotrophs, which are a group of bacteria, producing their food from oxidation of certain chemicals. e.g. sulphur bacteria.

- **Consumers:** These organisms get their food by feeding on other organisms. They are of the following types:
  - ✓ **"Herbivores**" which feed on plants e.g. rabbit, insect.
  - ✓ **"Carnivores"** which feed on herbivores as secondary carnivores (e.g., frog, small fish) or tertiary carnivores (e.g., snake, big fish), which feed on other consumers.
  - ✓ **"Omnivores**" which feed on both plants and animals e.g., humans, rats, many birds.
  - ✓ "**Detritivores**" which feed on dead organisms e.g., earth worm, crab, and ants.

- **Decomposers:** These are micro - organisms which break down organic matter into inorganic compounds and in this process they derive their nutrition. They play a very important role in converting the essential nutrients from unavailable organic form to free inorganic form that is available for use by plants e.g., bacteria, fungi.

2. Abiotic components: Various physico-chemical components of the ecosystem constitute the abiotic structure:

- **"Physical components**" include sunlight, solar intensity, rainfall, temperature, wind speed and direction, water availability, soil texture etc.

- **"Chemical components**" include major essential nutrients like C, N, P, K, H_2, O_2, S etc. and micronutrients like Fe, Mo, Zn, Cu etc., salts and toxic substances like pesticides.

    These physico-chemical factors of water, air and soil play an important role in ecosystem functioning. Moreover,   every   ecosystem performs the following important functions:
- ✓ It has different food chains and food webs. Food chain is the sequence of eating and being eaten.

    e.g., Grass → Grasshopper → Frog → Snake → Hawk
- ✓ Phytoplanktons (water-algae) → water fleas → small fish → large fish (Tuna)

- ✓ These are known as grazing food chain - which start with green plants and culminate with carnivores.
- ✓ Another type is detritus food chain - which starts with dead organic matter.

e.g., Leaf litter in a forest → Fungi → bacteria

Food chains are generally found to be interlinked and inter-woven as a network and known as Food Web. There are several options of eating and being eaten in a food web. Hence these are more stable.

There is uni-directional flow of energy in an ecosystem. It flows from sun and then after being captured by primary producers (green plants), flows through the food chain or food web, following the laws of thermodynamics. At every successive step in the food-chain, there is huge loss of about 90% of the energy in different processes (respiration, excretion, locomotion etc.) and only 10% moves to next level (Ten per cent law of energy flow).

Nutrients (Materials) in an ecosystem move in a cyclic manner. The cycling of nutrients takes place between the biotic and abiotic components, hence known as biogeochemical cycles (bio = living, geo = earth, chemical = nutrients).

Every ecosystem functions to produce and sustain some primary production (plant biomass) and secondary production (animal biomass).

Every ecosystem regulates and maintains itself and resists any stresses or disturbances up to a certain limit. This self regulation or control system is known as cybernetic system.

Balanced Ecosystem: Ecosystems have a unique property of self-regulation. The ecosystem comprising various sub-components of biotic and abiotic nature, which are inter-linked and inter-dependent, have an inherent property to resist change. That means the ecosystems have a property to tolerate external disturbance or stress. This property is known as homeostasis.

The ecosystems have a definite structure comprised of certain types of living organisms, which have a definite place and role in the ecosystem, as defined by their position in the food-web. Together, in interaction with the abiotic components, these ecosystems perform the functions of energy flow and material cycling, and finally give a desired output in the form of productivity.

Every ecosystem can operate within a range of conditions, depending upon its homeostasis (capacity to resist change). Within its

homeostatic plateau, the ecosystem has the potential to trigger certain feedback mechanisms which help in maintaining the ecosystem functioning by countering the disturbances. Such deviation-counteracting feedbacks are known as negative feedback mechanisms. Such feedback loops help in maintaining the ecological balance of the ecosystem.

A balanced ecosystem has basic biotic components which have evolved with time to suit the environmental conditions. The flow of energy and cycling of nutrients take place in a definite pattern in such an ecosystem, under a set of physical environment.

However, as the outside disturbance or stress increases beyond certain limit (exceeding the homeostatic plateau of the ecosystem) the balance of the ecosystem is disrupted. This is because now another type of feedback mechanisms, which are deviation accelerating mechanisms start operating. Such feedbacks are called positive feedback mechanisms, which further increase the disturbances caused by the external stress and thus take the ecosystem away from its optimal conditions, finally leading to collapse of the system.

To understand the concept we can consider an example. Carbon dioxide is required by green plants to manufacture their food during photosynthesis and the food produced by green plants is actually the base of food chains, energy flow and material cycles. The ecosystems have an excellent balance of regulating the levels of carbon dioxide through carbon cycle, where all living organisms produce CO_2 during respiration and the green plants use them up during photosynthesis, liberating oxygen. Up to certain limits, increase in CO_2 concentrations can help in improving production by green plants. But beyond a limit, the increased CO_2 will cause an imbalance in the ecosystem triggering various harmful positive feedbacks. As a result, several adverse environmental impacts occur including global warming, changing rainfall patterns, crop insecurity, storms, flooding and emergence of new types of pests - all leading to degradation of the ecosystem.

Environment: The term 'Environment' is derived from the French word 'Environner' which means 'to surround'. There was a time when environment just meant surroundings. It was used to describe the physical world surrounding us including soil, rocks, water and air. Gradually it was realized that the enormous variety of plants, animals and micro-organisms on this earth, including human beings are an integral part of the environment. Hence, to make a sensible definition of environment, it was

necessary to include the interactions and inter-relationships of all living organisms with the physical surroundings.

Later, it was further recognized that all types of social, cultural and technological activities carried out by human beings also have a profound influence on various components of the environment.

Thus various built structures, materials and technological innovations also became a part of the environment. So now all biological (biotic) and non-biological (abiotic) entities surrounding us are included in the term 'environment'. The impact of technological and economic development on the natural environment may lead to degradation of the social and cultural environment.

Thus, environment is to be considered in a broader perspective where the surrounding components as well as their interactions are to be included. The 'biophysical environment' is the biotic and abiotic surrounding of an organism or population, and includes particularly the factors that have an influence in their survival, development and evolution. The naked term environment can make
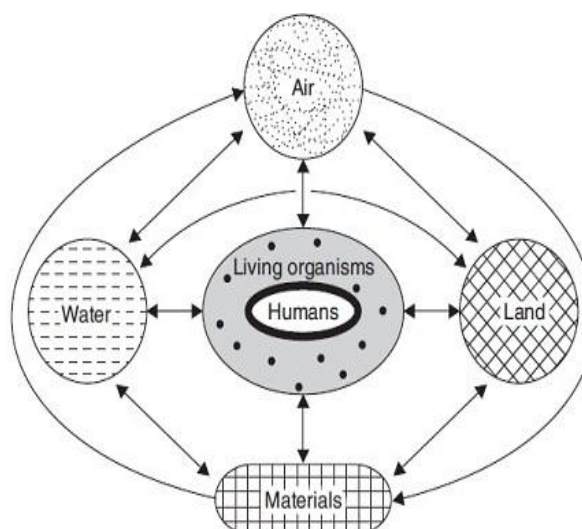

Fig. 9(a): Concept of Environment

reference to different concepts, but it is often used as a short form for the biophysical environment. This practice is common, for instance, among governments that usually name their departments and agencies dealing with the biophysical environment with denominations like Environment Agency. Whereas the expression "the environment" is often used to refer to the global environment, usually as referred to humanity, the number of biophysical environments is countless, given that it is always possible to consider an additional living organism that has its own environment. Environment is thus defined as "the sum total of water, air and land and the inter-relationships that exist among them and with the human beings, other living organisms and materials." The concept of environment can be clearly understood from Fig. 9(a). It depicts the environment of human beings. Air, water and land surrounding us constitute our environment, and influence us directly. At the same time we too have an influence on

our environment due to overuse or over-exploitation of resources or due to discharge of pollutants in the air, water and land. The flora, fauna and micro-organisms as well as the man-made structures in our surroundings have a bi-directional interaction with us directly or indirectly. The totality of all these components and their interactions constitute the environment.

Scope of Environment studies:

Environmental studies as a subject have a wide scope. It encompasses a large number of areas and aspects, which may be summarized as follows:

- Natural resources—their conservation and management
- Ecology and biodiversity
- Environmental pollution and control
- Social issues in relation to development and environment
- Human population and environment

These are the basic aspects of environmental studies which have a direct relevance to every section of the society. Environmental studies can also be highly specialized concentrating on more technical aspects like environmental science, environmental engineering or environmental management. In the recent years, the scope of environmental studies has expanded dramatically the world over. Several career options have emerged in this field as categorized below:

- Research & Development (R & D) in environment
- Green advocacy
- Green marketing
- Green media
- Environment consultancy

- **Research & Development (R&D) in environment:** Skilled environmental scientists have an important role to play in examining various environmental problems in a scientific manner and carry out R & D activities for developing cleaner technologies and promoting sustainable development. There is a need for trained manpower at every level to deal with environmental issues. Environmental management and environmental engineering are emerging as new career opportunities for environmental protection and management. With the pollution control laws becoming more stringent, industries are finding it difficult to dispose off the wastes produced. In order to avoid expensive litigation, companies are now trying to adopt green technologies, which would reduce pollution.

Investing in pollution control technologies will reduce pollution as well as cut on costs for effluent treatment. Market for pollution control technology is increasing the world over. Cleaning up of the wastes produced is another potential market. It is estimated to be more than $100 billion per year for all American business. Germany and Japan having more stringent laws for many years have gained more experience in reducing effluents. Still there is a $ 200 billion market for cleaning up the former East Germany alone. In India also the Pollution Control Boards are seriously implementing pollution control laws and insisting on upgradation of effluents to meet the prescribed standards before they are discharged on land or into a water body. Many companies not complying with the orders have been closed or ordered to shift.

- **Green advocacy:** With increasing emphasis on implementing various Acts and Laws related to environment, need for environmental lawyers has emerged, who should be able to plead the cases related to water and air pollution, forest, wildlife etc.

- **Green marketing:** While ensuring the quality of products with ISO mark, now there is an increasing emphasis on marketing goods that are environment friendly. Such products have ecomark or ISO 14000 certification. Environmental auditors and environmental managers would be in great demand in the coming years.

- **Green media:** Environmental awareness can be spread amongst masses through mass media like television, radio, newspaper, magazines, hoardings, advertisements etc. for which environmentally educated persons are required.

- **Environment consultancy:** Many non-government organizations (NGOs), industries and government bodies are engaging environmental consultants for systematically studying and tackling environment related problems.
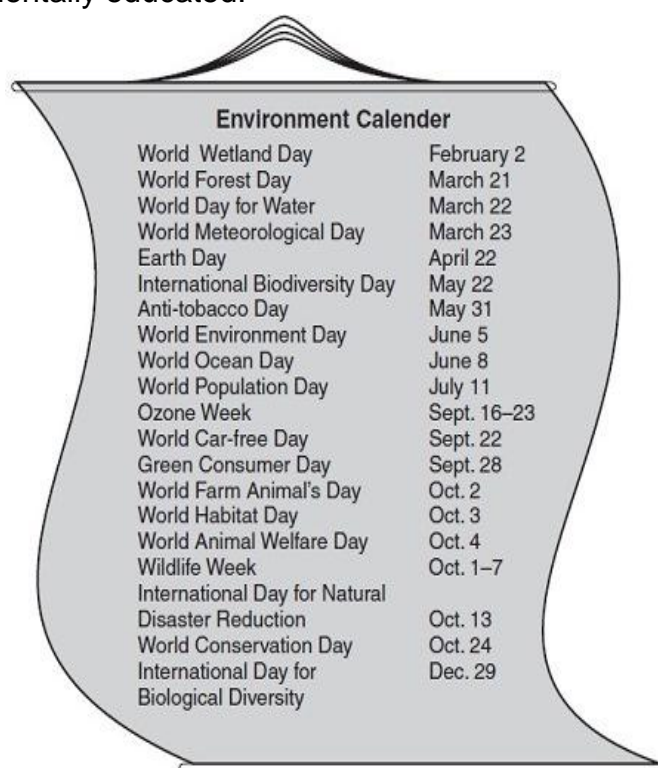
IMPORTANCE OF ENVIRONMENT

Environment belongs to all and is important to all. Whatever be the occupation or age of a person, he will be affected by environment and also he will affect the environment by his deeds. That is why we find an internationally observed environment calender to mark some important aspect or issue of environment, as shown in Fig. 9(b).

Environment is one subject that is actually global as well as local in nature. Issues like global warming, depletion of ozone layer, dwindling forests and energy resources, loss of global biodiversity etc. which are

going to affect the mankind as a whole are global in nature and for that we have to think and plan globally.

However, there are some environmental problems which are of localized importance. For dealing with local environmental issues, e.g. impact of mining or hydroelectric project in an area, problems of disposal and management of solid waste, river or lake pollution, soil erosion, water logging and salinization of soil, fluorosis problem in local population, arsenic pollution of groundwater etc., we have to think and act locally. In order to make people aware about those aspects of environment with which they are so intimately associated, it is very important to make every one environmentally educated.

Environment Calender

World Wetland Day	February 2
World Forest Day	March 21
World Day for Water	March 22
World Meteorological Day	March 23
Earth Day	April 22
International Biodiversity Day	May 22
Anti-tobacco Day	May 31
World Environment Day	June 5
World Ocean Day	June 8
World Population Day	July 11
Ozone Week	Sept. 16–23
World Car-free Day	Sept. 22
Green Consumer Day	Sept. 28
World Farm Animal's Day	Oct. 2
World Habitat Day	Oct. 3
World Animal Welfare Day	Oct. 4
Wildlife Week	Oct. 1–7
International Day for Natural Disaster Reduction	Oct. 13
World Conservation Day	Oct. 24
International Day for Biological Diversity	Dec. 29

Fig. 9(b): Internationally observed Environment Calender

Environmental studies is very important since it deals with the most mundane problems of life where each individual matters, like dealing with safe and clean drinking water, hygienic living conditions, clean and fresh air, fertile land, healthy food and sustainable development. If we want to live in a clean, healthy, aesthetically beautiful, safe and secure environment for a long time and wish to hand over a clean and safe earth to our children, grandchildren and great grandchildren, it is most essential to understand the basics of environment.

9.4   SUSTAINABLE DEVELOPMENT

Introduction: Sustainability is an integrative concept because it looks at the human use and management of resources in a manner that should not destroy or disturb the habitat that is the basis of survival. Socioeconomic and environmental dimensions thus become the focus of the management approach. Changes in the views of the community and its attitudes towards development are relegated to a secondary position.

The two alternative paths for development, i.e., you live in harmony with nature or you exploit nature have always been available to the human beings. Different societies, at different intervals have adopted either of the two paths.

Some, on the other hand, adopted a middle path. There are village societies where while consuming the natural resources precautions were taken that the future generations should not be adversely affected. Decision making in such societies was done keeping in view the interests of future generations and not just of the present ones.

Hence, what in modern terminology is described as sustainable may not be a new concept for many students of history. With over 300 definitions of sustainable development and every one claiming to be a "green", it is not an easy task to define sustainability in the developmental context. However, the awareness and growth of nature conservation, concern for environmental degradation, etc. have all contributed to the emergence of this concept in its modern sense.

For the first time and effort was made at the international level in 1990 during the Globe 90 Conference (Vancouver, Canada) to link tourism and travel with sustainable development. The Tourism Stream Action Strategy Commission of the conference prepared an Action Strategy for Sustainable Development. Further, the United Nations Conference on Environment and Development came with the famous Rio declaration (June 1992)*. Some of the highlights of this declaration are:

In order to achieve sustainable development, environmental protection should constitute an integral part of the development process and cannot be considered in isolation from it. (Principle 4).

All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world (Principle 5). The right to development must be fulfilled so as to equitably meet

developmental and environmental needs of present and future organizations (Principle 3), etc.

(For details of Rio declaration see www.unep.org/Documents.asp?Document ID=78&ArticleID=1163)

Sustainable development has been defined in many ways but the most frequently quoted definition is from Our Common Future, also known as the Brundtland Commission in 1987*:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."

*(*Please note that in 1983, the UN established the World Commission on Environment and Development which was chaired by the Prime Minister of Norway, Gro Harlem Brundtland. The report of this commission (1987) is famous as Brundtland Report.)*

All definitions of sustainable development require that we see the world as a system—a system that connects space; and a system that connects time.

When you think of the world as a system over space, you grow to understand that air pollution from North America affects air quality in Asia, and that pesticides sprayed in Argentina could harm fish stocks off the coast of Australia.

And when you think of the world as a system over time, you start to realize that the decisions our grandparents made about how to farm the land continue to affect agricultural practice today; and the economic policies we endorse today will have an impact on urban poverty when our children are adults.

We also understand that quality of life is a system, too. It's good to be physically healthy, but what if you are poor and don't have access to education? It's good to have a secure income, but what if the air in your part of the world is unclean? And it's good to have freedom of religious expression, but what if you can't feed your family?

The concept of sustainable development is rooted in this sort of systems thinking. It helps us understand ourselves and our world. The problems we face are complex and serious—and we can't address them in the same way we created them. But we can address them.

Approaches to Sustainable Development: Development means different things to different people. It is a combination of differing values, both material and ethical. It covers the present and the future, but uses the past to show the way to compare and to evaluate the nature of social change that includes economic and technological changes as well as the cultural and geo-political context of change. Consequently, there has not only been a debate on the nature and structure of development, but approaches have been suggested on how to measure tourism and its impacts and also to create perspectives that express the evolution of balance, development and growth.

To make the debate accessible to a wider and concerned group, four broad approaches to development can be identified. These are:

- Modernization theories
- Dependency theory
- Neo-Liberal or neo-classical responses
- Alternative development approaches

Modernization theories see societies passing through a series of stages, from lower to higher levels of development. The highest level is where the role of innovation and entrepreneurship is of great importance, as the developed areas of the world have demonstrated. State involvement to ensure a trickle-down effect is a part of this model. In tourism, enclaves and large resorts and state investments in such projects in partnership with the private sector have been encouraged in all developing countries. In India the state owned Ashok group of western style hotels in metros, urban areas and even remote destinations was a part of the modernization model.

Dependency theory links development to external forces, where power at the centre exploits the periphery. An example is the colonial exploitation of India, where British interests determined the path of development undertaken in India.

International tourism, being concentrated in the West, uses developing countries as cheap destinations for budget tourists, which perpetuates the dualism between the rich and the poor. The response to this concentration of wealth and power is to favour domestic markets, be self-sufficient and substitute domestic tourism for international tourism to have control of the expenditure and benefits. In India, domestic tourism is of the volume of 170 million and contributes three times the earnings of international tourism. Domestic tourism is only now being recognized as the basis of tourism development, rather than international tourism.

Neo-Liberal or neo-classical responses to the oil crisis and the debt crisis of the '70s and '80s have stressed the role of privatization and the free market as a solution. Development through incentives, subsidies and other financial inducements to foreign investors has been propagated for developing countries to reach the same level in tourism activity as Europe and North America have achieved in the post war period. The World Bank has been a major proponent of this approach, along with other non-governmental international organizations like the UNDP and the ADB, which have funded major tourism programmes in developing countries. The scale of these projects often defied the local aspirations and conditions. This led to the emergence of the movement of local NGOs, who evaluated the impacts of such developments. Their conclusions were that such forms of tourism did not help the disadvantaged who were the most in need of economic activity that would help to remove their poverty.

Alternative Development approaches are based on basic needs satisfaction. Has the resort development at Kovalam or Goa resolved the issue of food, clothing, housing, health and education needs of the local people? This approach provides a grass roots perspective, where local needs and peoples control are the major planning inputs. Eco-tourism, nature tourism, appropriate tourism, ethical tourism and responsible tourism are some of the concepts that have emerged from this approach. These concepts often overlap and are not very precise. Critics argue that tourism is big business, and the grass roots approach may not bring the benefits desired. The gender perspective, which looks at the issue of women in tourism and opposes the promotion of child abuse and sex tourism, has also been a contentious area between proponents of alternative tourism and mainstream tourism.

As these ideas indicate, the tourism development debate is also a political and ideological debate. Conservative politics favours open market with very little State control in tourism. The top-down approach, with a strong private – public partnership is their solution to the issue of growth in tourism. Liberals are divided between non-structural economists and structural economists.

The former urge the grass roots approach while the latter favour broad based reforms to create a better distribution of wealth. The more radical Marxist approach, which favours class struggle as a method to redistribute wealth and power, sees in international tourism the seeds of neo-colonialism. It advocated social tourism or state subsidy for access to tourism for the mass of people. However, the Marxian approach is also

undergoing changes. The development of tourism in China for economic gains, in Cuba for image promotion and economic benefits and the emergence of Kerala under a Marxist government as leading tourism state in India are examples in this regard.

Within the concept of sustainability, Kerry B. Godfrey ("Towards Sustainability", in Harrison and Husbands (ed.) Practicing Responsible Tourism, New York, 1996) has mentioned two schools of thought:

- **The Product Approach:** In this approach sustainability is regarded as an alternative to or replacement of conventional mass tourism by developing new green products.
- **The Industry Approach:** Considering that mass tourism is inevitable because of the tourist demand the requirement is to make all forms of tourism more sustainable.

The Industry approach endorses the Product Approach's positive qualities but believes that it cannot replace mass-tourism and as Cohen puts it, the aim should be to help to "reform the tourist establishment and mass tourism from within" (1989). In fact no single approach is viable to meet the challenge of sustainability. The issue is further complexed because of the diversity in fragility, durability and other natural features of the tourism regions, areas or sites which are targeted for sustainable development.

Roles and responsibilities towards Sustainable Development: "Ignorance, politics and economics seems to work contrary to the attainment of the goal of sustainable development as far as tourism is concerned", wrote Richard W. Butler ("Pre and Post-impact Assessment of Tourism Development" in Pearce and Butler (ed.) Tourism Research, London 1993). As a result of the deterioration of tourism attractions and resources, it is tourism itself which suffers heavily. The victims are the host communities, for the tourist will move to another unspoilt destination (only to spoil it?). It is the local industry that will suffer as the big players will also move out and do business elsewhere. At many destinations even the host communities, in order to make quick money, over use or throw open their resources and environment to be exploited by the visitors, businesses or local vested interests. It is time for them to realise that this is a suicidal path for the destination. In order to move towards the path of sustainability or to achieve sustainable development every player in tourism has a role which is loaded with heavy responsibilities. Middleton mentions five good reasons for collective action by the multiple players in tourism on the environmental issues (Sustainable Tourism, 1998):

- Size and Growth Potential
- Prosperity
- Global reach
- Market Demand, and
- Competitive Business Advantage

All these five aspects are interlinked. For example, the size and growth potential will depend on the quality of environment of tourism areas and a sense of growing responsibility has to be conveyed to all in this regard. The physical environment and diverse cultures, as the core resources for tourism not only need to be "collectively protected" for their "intrinsic values" but also need to be treated by the industry in practice "in the same way as commercial assets, needing continuous maintenance, refurbishment, and investment". Tourism is a global activity and the industry has the option either to be in the "vanguard of change and influence and control events, or ignore the process of environmental change". However, if they opt for the second, they alone will be the sufferers as the initiative and control will pass on to "regulators" and "anti-tourism lobbies".

Middleton points out that there are clear indicators that the market demand is for such tourism products "which offer clean air, clean beaches and bathing water, pristine mountain slopes and uncongested, crime and pollution -free destinations. One can add to this many other attributes like authenticity of crafts, customs (i.e., cultural aspects), the demands of "green tourists", etc. Hence, ignoring these aspects of market demand in product-design, marketing strategies and business operations will be a self -defeating exercise for the tourism industry. Those in the industry who contribute towards sustainable practices and development will have a competitive business advantage.

A realization to this effect is already there and various tourism industry associations are making their members aware and adopting codes of conduct in this regard. Here one must remember that the NGO's are playing a vital role, often through struggles also, in influencing the attitudes of the industry as well as the people in the destination areas.

Hence, it is necessary to make the consumer of tourism products aware of sustainable practices. No doubt a new consumer has started emerging with a different market demand as mentioned earlier. While consuming tourism resources, this consumer is concerned with the issue of sustainability. But it is still a Herculean task to make every tourism consumer, business and service provider contribute towards sustainable

tourism development. The responsibilities in this regard lie with one and all, i.e. government, industry, tourists and locals. Middleton mentions two major dimensions in this regard:

- "Improving sustainable practice at the destination chosen by visitors", and
- "The way the businesses within the travel and tourism industry conduct their development and operational decisions."

We can add to these the commitment of the government, the local bodies and people to sustainable development. A commitment that should be demonstrated through practice and not by conferences or on paper alone. At the same time the workers and trade unions also have a responsibility in this regard. The International Confederation Free Trade Union and Trade Union Advisory Committee to the OECD's background paper for the commission on Sustainable Development (April 1999) stated that "Trade Unions are well placed to play a role in making sustainable tourism a reality … tourism workers have the potential of becoming active agents of change amongst the tourists they are paid to serve … however, it can only be achieved with the cooperation of employers, governments and NGO's." An important tool for monitoring the sustainability criteria is impact assessment of tourism. However scholars like Richard W. Butler have gone a step further to advocate even post impact assessment (Pearce and Butler, Tourism Research, 1993) of tourism projects.

9.5   TOURISM DESTINATION

Introduction: Tourism Destinations are places share certain characteristics; attractions, amenities and accessibility. Bierman (2003, p.2) defines a destination as "a country, state, region, city or town which is marketed or markets itself as a place for tourists to visit."

Tourism Destinations are naturally formed or can be constructed (so does this make Dubai an attraction or a destination?). Just as tourism products have a life cycle (beginning with exploration and ending with their withdrawl) so as to does a tourist destination. SWOT analysis an acronym for Strength, Weakness, Opportunity and Threats is often used when specifying objective/s for business ventures or projects and identifying the internal and external factors that are favourable and unfavourable to achieving these objective/s. Take this business SWOT and use it as a framework for a destination SWOT on Madrid, using the SWOT matrix.

The destination is a place where the main focus of the trip will be, whether a conference, a sales mission or an incentive travel package.

Destinations can be viewed on a number of different geographical levels, from whole countries, through regions, to a rural area, an individual city or a single coastal resort. Destinations have different types of boundaries; they can be seen in terms of central government or local government boundaries, geographical features or even the perceptions of the client. Indeed it could be that the latter is the most important, for it is those perceptions which determine customer purchasing behaviour.

Many destinations are branded to increase their appeal, such as the 'Big Apple' for New York. While having little meaning in geographical terms these brands can be powerful marketing tools. Names such as the French Riviera have great power to attract business tourists and Incredible India to attract the tourist interested for cultural and heritage tourist resources. Destinations, however they are branded, are discrete areas which supply all or most of the attractions and services required by the business traveler, whatever the purpose of their trip.

Traditionally there has been a clear distinction between destinations and venues. The former were areas while the latter were individual units within these areas. Venues are supposed to provide one or some of the services needed by the traveler, while destinations overall are meant to provide virtually every service the traveler needs. However, the distinction has become blurred as major attractions and resort complexes have sought to become destinations in their own right, providing all the services required by the business tourist. Such examples include Center Parcs, Club Med and Disneyland Paris, which have all sought to become 'destinations' for conferences and incentive travel packages.

The tourism 'destination' dates back to pre-historical time. Individual business trips linked to trading have been taking place for, literally, thousands of years. In the middle ages, we saw the rise of trade fairs in Europe, with their own infrastructure of services. However, it is only in the last hundred years that we have seen the rise of convention tourism, beginning in the USA. This was an innovation because business tourism was no longer simply trade-related. In this case the destination was central to the trip rather than just being a 'backdrop' for the business activities.

During the 1980s and 1990s we have seen the rise of incentive travel where the destination is the principal attraction and focus of the trip. Destinations have realized that business tourism brings great benefits and every year new destinations try to attract convention, exhibition and incentive travel business. The reasons for this are not hard to identify, for

business tourism has a number of advantages over leisure tourism. As they are usually not paying the bill, business tourists tend to spend two or three times as much money per day as leisure tourists. However, they are more likely to spend their money with transnational companies so that a higher proportion of their expenditure may be lost to the local community.

Business tourists demand a high level of personal service, so accommodating them is a labour-intensive activity which creates more jobs than leisure tourism. Business tourism spreads its benefits widely around local enterprises because of its demand for everything from florists to secretarial services, photographers to security people. Business tourism tends to be less seasonal than leisure tourism, and it is complementary to leisure tourism in that it is in full swing in the months which are the off-peak season for leisure tourism and fills hotels on weekdays but leaves them empty for the leisure tourist at the weekends.

Destination Categories: The destinations are categories into five destination groupings as given below:

- The most common is the centered destination - the traditional holiday where tourists travel to a destination where they expect to spend the majority of their time, perhaps with occasional excursions to nearby attractions.
- The base destination - from where the surrounding region can be explored.
- Multicentre holidays where two or more destinations are of equal importance on the itinerary.
- The touring destinations, which will be part of a linear itinerary. Or a little closer to home Great Ocean Road. In groups choose an attraction from the reading and describe it as if you were a travel agent selling to a client. Then answer who, what, where, why and how questions regarding the Twelve Apostles.
- The transit destinations, these are the stopovers en route to the final destination. Travelers from New Zealand to the UK have quite a few stopover choices.

Promotion of the Destination: A destination can be anything from a nation to a region, a resort to a city, and can contain one or many attractions or hold annual or one off events. How is the image, perception, expectation of the destination promoted and formed in the eye of the tourist?

Tourism New Zealand is the National Tourism Organisation which markets New Zealand. It does this through the 100% Pure New Zealand campaign. New Zealand also has 29 Regional Tourism Organizations (RTO's) or Destination Marketing Organisation, DMO's as they are known overseas. Promotion needs have progressed and while traditional advertising and promotion continue to be used, new methods Web 2.0 are proving popular in providing more user based resources.

Concept of Destination Branding: Branding defines a unique set of beliefs about a destination and the sort of holidays or breaks it offers - beliefs that are equally emotional and rational, make it stand out from the competition and make it feel just right for each of its many target audiences.

Many factors will go into the creation of these beliefs. Getting it right requires clear strategic thinking - weighing up what you can offer against what your competitors are doing, what your potential visitors are looking for, and most importantly how to adapt to change.

Canadian Tourism talks about the brand. Take a look at their "social media" section (left hand side of the website) and watch a video on YouTube or become a fan on Facebook.

Howe Caverns wanted to reinvent themsevles as a year-round travel destination and enhance the user's experience to attract new and repeat visitors. To do this it first had to rebrand the destination/attraction and produce a new media marketing campaign if annual visit numbers were to increase. So how did it do this? It's also interesting to compare New Zealand's eqivalents to the Howe Caverns, Waitomo Caves and Te Anau's glow worm caves.

Just as destination branding can contribute to the success of a destination it can also make it more susceptable to negative or damaging influences. "Any growth in the negative perception of New Zealand's world brand needs to be carefully considered as it could potentially have significant financial implications for the tourism industry, and for the other industries and products that trade off New Zealand's world image," says TIA Chief Executive Tim Cossar.

The destination product: The tourism destination product is not really a product; it is more an amalgamation of individual products at the disposal of the tourist or traveler. These individual products can be divided into a number of groups as shown in Fig. 9(c).

The destination is like a do-it-yourself kit, from which the tourist constructs his or her own product or experience. There are clearly a myriad of possible permutations of all these elements and each business tourism event or individual business traveler will use the destination in a different way.

The destination, like all tourism products, is a mixture of tangible and intangible elements. The intangible elements are vital to the success or otherwise of a destination, but they are often highly subjective and are subject to customers' perceptions. These perceptions include issues such as:

- whether or not the destination is seen as safe, secure and stable
- the perceived ambience and atmosphere
- the degree to which the destination is seen to be friendly or not
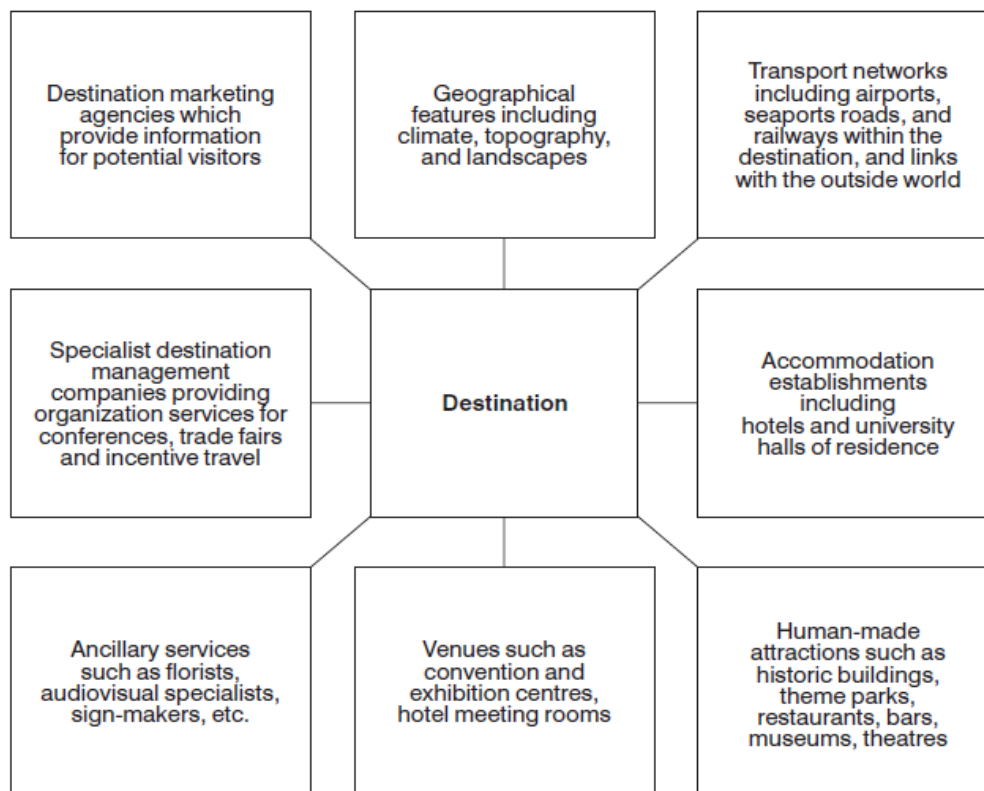- the perceived efficiency and reliability of services within the destination

Fig. 9(c): The elements of the destination product

As yet, relatively little research has been conducted concerning tourists' perceptions of destinations. However, we cannot overestimate

these perceptions as determinants to decision-making in the conference, exhibition and incentive travel sectors.

The last important point to recognize about the tourism destination product is the high level of interdependence between the various elements. If one element fails the whole product collapses. For example, an excellent conference venue and a superb range of social programme attractions will not produce a successful conference experience for delegates if the coaches booked to take delegates to the attractions fail to appear.

A typology of destinations: A concept of tourism destination typologies is based on the classifications of tourists based on their behavior. The number of tourists has grown over the years. These typologies serve as guide to tourism business owners as to what products, services and facilities should be sold to certain tourists having the same behavior. Marketers and planners as well as managers of tourism businesses consider these typologies to guide their marketing, planning, and development and management functions. The Fig. 9(d) offers a typology to illustrate the different roles which destinations can play in the phenomenon of travel and tourism. This is clearly a highly generalized picture but it does indicate the breadth of types of tourism destinations and their roles. Most destinations receive and service a wide variety of types of tourism simultaneously.

Stanley Plog classified tourists into two major classifications based on their personality and curiosity to visit places i.e. Allocentric and Psycho-centric types. Allocentric is often adventure seekers and go for new experiences. They prefer outings and are self-confident. They are not only comfortable meeting strangers or new people but also it fascinates them for they explore into their cultures while such meetings. These people specify the area and make their own travel arrangements. Psychocentric are generally conservative, inhibited and unadventurous. They are traditional and have little curiosity to visit strange places. They are frequently keep returning to familiar destinations to avoid troubles. They want to relax, love serenity and better happy when undisturbed. Tourists of Psycho-centric type expect the same food and activities. The ultimate factor is that they are too much worried about touring is safety and security. On the other side, Cohen's Tourist Typology given by Eric Cohen categorized tourist into four types viz. organized mass tourist, individual mass tourist, the explorer and the drifter. This is similar to Plog's model

wherein psycho-centrics are further divided into organized and individualized and the allo-centrics into explorers and drifters.

The organized mass tourist prefer package tour, fixed itineraries, planned stops, guided organizers making the decisions, familiarity at a maximum and novelty at a minimum.

The individual mass tourist includes tour not entirely planned by others, tourist having some control over his / her itinerary and time allocations, major arrangements made through travel intermediary, tourist remaining largely within the environmental bubble of home country ways and mixing little with locals and dominant familiarity.

The explorer includes tourist usually planning his / her own trips and trying to avoid developed tourist attractions, desire to mix with locals but still protected within the environmental bubble, dominant novelty and tourist not fully integrating with the locals.
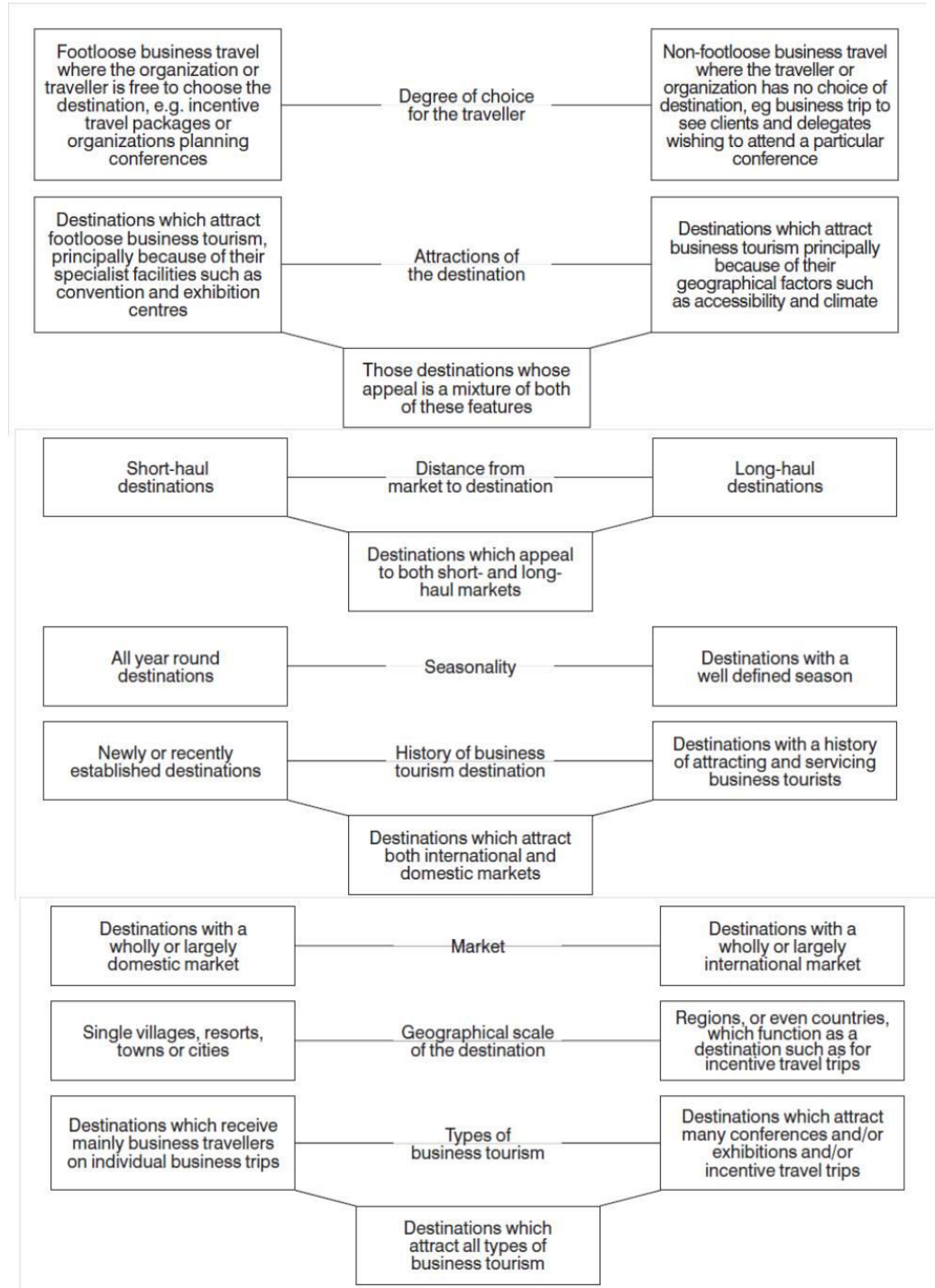

Fig. 9(d): A typology of destinations

And the drifters are tourist, planning their trip alone, tourists avoid tourist attractions and live with the locals, almost entirely immersed in the host culture, sharing its shelter, food and habits while novelty is dominant and familiarity disappears.

9.6   SUSTAINABLE DEVELOPMENT OF TOURISM

Sustainable Development and Tourism: Tourism is one of the world's fastest growing industries and an important source of foreign exchange and employment for many developing countries. In reviewing the first five years' implementation of Agenda 21 in 1997 at its nineteenth Special Session, the General Assembly of United Nations indicated the need to give further consideration to the importance of tourism in the context of Agenda 21. In 2002, the World Summit on Sustainable Development in Johannesburg addressed sustainable tourism in Chapter IV, paragraph 43 of the Johannesburg Plan of Implementation.

Tourism that focuses on natural environments is a large and growing part of the tourism industry. While it can contribute in a positive manner to socio-economic development and environmental protection, uncontrolled tourism growth can also cause environmental degradation, destruction of fragile ecosystems, and social and cultural conflict, undermining the basis of tourism.

The UN General Assembly in 1998 proclaimed 2002 as the International Year of Ecotourism (A/RES/53/200), reaffirming Economic and Social Council resolution 1998/40, of 30 July 1998. For further information on activities related to Ecotourism, please consult the web-site of the World Tourism Organization.

As announced at the Johannesburg Summit, the World Tourism Organization, in collaboration with UNCTAD, launched the Sustainable Tourism-Eliminating Poverty (STEP) initiative to develop sustainable tourism as a force for poverty alleviation.

The UN Commission on Sustainable Development (CSD) last reviewed the issue of sustainable tourism in 2001, when it was acting as the Preparatory Committee for the Johannesburg Summit. In its current work programme, the CSD will next take up the issue of sustainable development in its fifth cycle, in 2012 and 2013.

The concept of sustainability has become a fundamental issue in tourism development and growth after the debate at the Rio Earth Summit in 1992. Seeing the rapid changes in tourism and the world trends, we are now examining geopolitical, socio-economic, technological and

environmental impacts of contemporary tourism. It was realized that tourism requires an agenda of its own, and not as a part of the overall post structural adjustment process. This was reflected in the 7th Meeting of the Commission on Sustainable Development in 1999, which was devoted to tourism impacts around the world. This was due, to a large extent, to the efforts of NGOs working in different parts of the world coming together to speak in one voice on what their experience had been through grass roots interaction, in the course of the phenomenal growth of tourism in the last two decades. It, therefore, became a part of the evaluation of the implementation of the Agenda 21 set at Rio.

The concept of sustainability when applied to tourism can be perceived and interpreted in various ways. Sustainability for attractions (both natural and man-made), infrastructure, cultures, environment, economy, etc. will have different meaning for different disciplines and the methodologies adopted also may not be the same. For example, a sociologist might be interested in retaining the authenticity of customs, rituals or other aspects of culture that are now being packaged as tourism products or attractions. In this case sustainability can be achieved by retaining the authenticity and hence, both the concepts are inter-linked. Similarly, in the case of natural resources (water, forests, hills, etc.) it would be linked to consumption patterns and levels; in case of historical buildings and monuments it would be linked to conservation aspects; for a destination it would mean sustaining its attraction and so on. And yet we can derive some commonality on the issue.

Tourism is also an economic activity like any other sector, although it has a glamorized image. It involves international forces that work according to global laws. This means that the development debate has to come to terms with the sustainability of international tourism, despite its complexities. Tourism has a variety of products to offer, from low impact products to high impact products. These can be delivered by the organized sector, but in small and developing countries the unorganized sector plays an important role in delivering these products. The tourism product has several components, which are supplied by a variety of suppliers, all of whom do not have common standards.

Tourism represents a variety of interests. At the destination are the local people who are divided by the costs and benefits of tourism. Then there is the industry, where the organized and unorganized sectors can have differences and the national and multinational companies can have a conflict of interests. Governments tend to promote tourism for economic

reasons without looking at the impacts and costs. Then there are the tourists who have different patterns of consumption and expect different levels of service. For the developmental debate therefore, we have to engage in a multi-stakeholder process to see how to resolve genuine conflicts and respect the aspirations of the stakeholders who are involved in this activity.

Sustainable Development and Tourism in India: Tourism is not an undifferentiated phenomenon. There are as many types of tourism as there are market segments (niche tourism / niche markets). There is a need for establishing a balance between tourism and other existing and potential activities especially in India. Again, merely endorsing sustainable tourism whilst continuing with mass tourism will make the costs and profits of such tourism growth disappear in the long run.

India has also been experiencing a sharp rise in tourism activities especially during the last couple of decade. The tourism perspective in the country has changed substantially over recent years. The tourism policy of the country has to be viewed in the light of the macro-economic policies of the country that had gone through a new thrust in the 1990s. The first ever tourism policy was announced by the government in November 1982. The major thrust of the policy was on aggressive marketing with an aim to present India as the ultimate destination of holiday resorts to the foreigners.

However, there has been wide spread concern that negative impacts of mass tourism have been destroying the over-exposed tourist resorts. It has been affecting the environment, both physical and cultural, adversely. Another important cause of concern is that the local aboriginal, in general, are still far from reaping the benefit of the tourism activities in a gainful manner. Therefore, it is the need of the hour to device and implements alternate tourism approaches that minimize the negative impacts of tourism as well as integrate economic development of the area ensuring equity amongst people. These strategies should also enable tourism activities to contribute positively towards overall economic development of the area through ensuring development of the local communities along with conservation of the natural and cultural environment.

The challenge before a country like India which has always looked at tourism as a source of earning foreign exchange, even though we have not had a foreign exchange crisis for a decade, is how to be a part of the

global market for new tourist destinations at a time when a new consumer is emerging. Such consumers are concerned with the issue of sustainability even as they consume more than their share of tourism resources in the far corners of the world.

In fact, there is a range of issues that the concept of sustainable tourism has raised in the contemporary tourism development debate. These include:

Contemporary tourism involves movement of 640 million people across boundaries and many many millions within the boundaries – figures that could not be imagined 50 years ago. How can we deliver a sustainable product – particularly where eco-systems are fragile and yet an attraction for the tourist gaze?

How to evaluate, keeping in view the sustainability criteria, the conflicts and convergence between development and tourism? This evaluation has to be done keeping in view the development of socio-economic and environmental resources for increasing the wealth and well being of the people.

Particular pressures of tourism on specific resources have to be evaluated. The need to accommodate the present rates of growth vis-à-vis consumption and production is a challenge to the concept of sustainable tourism.

There is a need for policy initiatives that would help to promote an awareness of the fact that contemporary tourism impacts go beyond the beneficial aspects and can also be very damaging as growth and profitability are pursued. This requires new terms of legitimatizing the importance given to tourism. Income generation and employment can no longer be the sole determinants in this regard.

Although both enterprises and governments can individually take action to enhance sustainability, working together will achieve much more. The process of collaboration and partnership is a key element of sustainable tourism development. This can be nest done through partnerships involving international bodies, central, state and local governments, travel and tourism companies, NGOs and the voluntary sector. Public private partnerships are essential to identify mechanisms and action plans to achieve sustainable development goals in tourism. Specific aims of public private partnership include:

- Regulatory regime like self-regulation and where necessary this is supplemented with regulation in areas such as land-use and waste management;

- Agreed indicators like measuring progress towards achieving sustainable development;
- Agreed and widely used certification criteria;
- Public funding programmes on marketing and destination development should have sustainable development principles as eligibility criteria;
- Research into sustainable tourism needs;
- Environmental education and training programme;
- Greater investment and use of new technology; and
- Fair and non-discriminatory taxes with revenue allocated to environmental improvement programmes.

As environmental and economic issues are becoming more interdependent, tourism policy makers and facilitators in India have to ensure that the new model of sustainability becomes an opportunity for target groups and communities and not a threat to their survival. Just as the worst impacts of tourism have been documented like cloud bursting in Ladakh or natural calamity in Uttarakhand in 2012 and 2013 respectively, so there is a need to document the best practices. However, these should be used to get a commitment for sustainability, not only as a political slogan but also as an analytical tool.

9.7 SIGNIFICANCE OF DESTINATION ECOLOGY AND ENVIRONMENT IN SUSTAINED DEVELOPMENT OF TOURISM

Ecology and environment vis-à-vis tourism destination: As the human population continues to grow, the natural environment is put under ever-increasing pressure. Losses of biological diversity and major environmental changes are occurring at an accelerating rate and as a direct result of human exploitation of resources. Growing public concern over issues such as degradation and destruction of coral reefs and tropical rain forests, greening of the Arctic and accelerated loss of Arctic sea ice, species extinctions and the impacts of global climate change make ecology, conservation and environmental sustainability some of the most relevant areas of science today.

There is growing interest in ecological footprint analysis in aiding our understanding of societal demands upon the biosphere. Increasingly, attention is being focused on potential new applications of the technique.

It is also essential to understand how ecology fits in the context of addressing key sustainable development challenges, where there is a

need to reconcile economic, social and environmental dimensions of sustainability. The need to find solutions means that there is a growing demand for professional ecologists who will have a key role to play in protecting the environment for future generations.

Tourism is one of the world's largest industries and can play a major part in encouraging more consumerist lifestyles. It is now widely accepted that tourism development may have profound impacts on local environments, and that, consequently, the sustainable development of tourism at destination areas is an important issue. However, sustainable tourism studies rarely look beyond the destination area, and there has been no substantive recognition of the wider ecological footprint of tourism activities.

Successful action on conservation and biodiversity issues should be based on a good understanding of the ecological processes and relationships that are impacted by environmental change. Key questions include:

- How quickly and where are environmental and climatic changes leading to ecological change?
- What makes some species and habitats more vulnerable than others?
- What are the implications of increased ecotourism for tropical and polar ecosystems?
- How can we reconcile the resource requirements of a growing human population with the need to conserve species and ecosystems?

The study of ecology and environment is fundamental in answering these and many other questions posed by practical conservation and biodiversity issues.

Role of sustainable tourism in sustaining the destination's ecology and environment: It has emphasized that well-designed and managed tourism can make a significant contribution to the three dimensions of sustainable development of the tourism destination. Tourism has close linkages to other sectors, and can create decent jobs and generate trade opportunities. Tourism can recognize the need to support sustainable tourism activities and relevant capacity-building that promote environmental awareness, conserve and protect the environment, respect wildlife, flora, biodiversity, ecosystems and cultural diversity, and improve the welfare and livelihoods of local communities by supporting their local

economies and the human and natural environment as a whole. Tourism also contributes to enhance the support for sustainable tourism activities and relevant capacity-building in developing countries in order to contribute to the achievement of sustainable development.

Tourism also encourage the promotion of investment in sustainable tourism, including eco-tourism and cultural tourism, which may include creating small and medium-sized enterprises and facilitating access to finance, including through microcredit initiatives for the poor, indigenous peoples and local communities in areas with high eco-tourism potential. In this regard, it is underline the importance of establishing, where necessary, appropriate guidelines and regulations in accordance with national priorities and legislation for promoting and supporting sustainable tourism. Expressed simply, sustainable tourism can be defined as:

"Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities"

Sustainable tourism development guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Sustainability principles refer to the environmental, economic, and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability. Thus, sustainable tourism should:

- Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.

Sustainable tourism development requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus building. Achieving sustainable tourism is a continuous process and it requires constant monitoring of impacts, introducing the necessary preventive and/or

corrective measures whenever necessary. Sustainable tourism should also maintain a high level of tourist satisfaction and ensure a meaningful experience to the tourists, raising their awareness about sustainability issues and promoting sustainable tourism practices amongst them.

Synergism of destination ecology and environment with tourism sustainability: The tourism industry has increased considerably in recent decades and has become one of the main sources of income in many countries. For many tourist sites, the reward phase of development is characterized by a long and intense growth in infrastructure, superstructure and facilities which, sooner or later, seriously impact on the environment, thus creating a critical situation. In fact, some destinations, after flourishing for a long time, have been abandoned by tourists in favor of more attractive sites newly available on the market. In order to compensate for this instability, local agents may seek increased investment and develop special facilities to attract tourists. Sometimes they are successful, but at the expense of the environment, which may be severely degraded.

It is difficult, if not impossible, to formulate policies that guarantee that tourism can be maintained for a long time without severely impacting on the environment. The analysis based on this argument is purely theoretical and is based on very simple and general assumptions about the interactions between the three main components of the system: the tourists, the environment, and the capital.

9.8 SUMMARY

The unit was started with the explanation of the term "Ecology" which was derived from the Greek words Oikos (means "home") + logos (means "study"). It is often defined as ''the study of ecosystems''. The ecosystems have basically two types of components, the biotic and abiotic. Ecosystems have a unique property of self-regulation. The ecosystem comprising various sub-components of biotic and abiotic nature, which are inter-linked and inter-dependent, have an inherent property to resist change. That means, the ecosystems have a property to tolerate external disturbance or stress. This property is known as homeostasis. The term 'Environment' is derived from the French word 'Environner' which means 'to surround'. There was a time when environment just meant surroundings. It was used to describe the physical world surrounding us including soil, rocks, water and air. Environment is

thus defined as "the sum total of water, air and land and the inter-relationships that exist among them and with the human beings, other living organisms and materials."

Environmental studies as a subject has a wide scope. It encompasses a large number of areas and aspects, which may be summarized as Natural resources—their conservation and management, Ecology and biodiversity, Environmental pollution and control, Social issues in relation to development and environment and Human population and environment. Then sustainable development was defined. Sustainable development means that development which meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts like the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs. To make the debate accessible to a wider and concerned group, four broad approaches to development can be identified. These are Modernization theories, Dependency theory, Neo-Liberal or neo-classical responses and Alternative development approaches. Then tourism destination was defined as tourism destinations are places share certain characteristics; attractions, amenities and accessibility.

Moreover, a destination as a country, state, region, city or town which is marketed or markets itself as a place for tourists to visit. The tourism 'destination' dates back to pre-historical time. Individual business trips linked to trading have been taking place for, literally, thousands of years. In the middle ages, we saw the rise of trade fairs in Europe, with their own infrastructure of services.

However, it is only in the last hundred years that we have seen the rise of convention tourism, beginning in the USA. This was an innovation because business tourism was no longer simply trade-related. In this case the destination was central to the trip rather than just being a 'backdrop' for the business activities. In sustainable development and tourism concept it has been discussed that the tourism is one of the world's fastest growing industries and an important source of foreign exchange and employment for many developing countries. In reviewing the first five years' implementation of Agenda 21 in 1997 at its nineteenth Special Session, the General Assembly of United Nations indicated the need to give further consideration to the importance of tourism in the context of

Agenda 21. In 2002, the World Summit on Sustainable Development in Johannesburg addressed sustainable tourism in Chapter IV, paragraph 43 of the Johannesburg Plan of Implementation.

Tourism that focuses on natural environments is a large and growing part of the tourism industry. While it can contribute in a positive manner to socio-economic development and environmental protection, uncontrolled tourism growth can also cause environmental degradation, destruction of fragile ecosystems, and social and cultural conflict, undermining the basis of tourism.

The tourism industry has increased considerably in recent decades and has become one of the main sources of income in many countries. For many tourist sites, the reward phase of development is characterized by a long and intense growth in infrastructure, superstructure and facilities which, sooner or later, seriously impact on the environment, thus creating a critical situation.

9.9   EXPECTED QUESTIONS

1. Explain the keywords ecology and environment and their inter-relationship?
2. Describe the concept of balanced ecosystem?
3. Explain the scope and importance of environment studies?
4. Describe the meaning and all the approaches of sustainable development?
5. What do you mean by the term tourism destination and explain the concept of destination product?
6. Write an essay on sustainable development and tourism in India?
7. Explain the role of sustainable tourism in sustaining the destination's ecology and environment?

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UNIT 10: ROLE OF TOURISM IN SUSTAINING MOUNTAIN ENVIRONMENT – CASE OF HIMALAYAS

STRUCTURE:

10.1   Introduction

10.2   Objectives

10.3   Importance of mountains in India

10.4   Mountain environment as a tourism product

10.5   Impact of tourism on mountain environment and what to do for its sustenance

10.6   A case of Himalayas

10.7   Summary

10.8   Expected Questions

10.9   References

10.1 INTRODUCTION

Tourism has become one of the most important aspects of man's spatial behaviour in modern times. It is, as some say, the most important civil industry in the world growing at a phenomenal annual growth rate of 10-15%. According to some estimates it contributes around 10% of the global GDP and 7% of the workforce. According to World Travel and Tourism Council, the total global capital investments, worldwide consumer spending (10.9%) and world's international trade in goods and services make tourism as one of the top three categories of trade.

In India also the 'white industry' is growing at a good pace thanks to the 'leisure revolution' and abundance of discretionary income. However, money making is not and has never been the best part of tourism. The social and cultural aspects, though less perceptible have more for reaching consequences. For a country like India endowed with vast natural wealth and human resources, tourism acquires a place of special importance. However, one should not turn a blind eye to ecological and environmental changes brought about by the increasing tourist traffic. Tourism is normally seen as a money minting industry. With the kind of growth rate and the income generation abilities, it assumes a particular significance in India. In the absence of a trade surplus or a sound foreign

exchange reserve, tourism is making a phen omenal though unplanned growth. But the returns of tourism should not obscure the long-term impacts of this smokeless industry on the local environment.

In this Unit, we shall talk about the various aspects of hill and mountain tourism and try and analyze its impact on the mountain environment. We will also try to explore the possible ingredients of a suitable management strategy. The present Unit is an attempt to analyze the varied impacts of tourism in the context of mountains' environment.

10.2 OBJECTIVES

After studing this unit learner will be able to:
- To understand the importance of hills and mountains as preferred tourist destinations
- To know and understand the nature of tourist movement in the mountainous areas
- To know about the different types of impacts resulting from tourism activity in the mountains
- To study about the mitigation measures needed for minimizing any adverse impacts of tourist activity on mountains
- To know about the Himalayas through a case study

10.3 IMPORTANCE OF MOUNTAINS IN INDIA

Mountain tourism has a good potential for growth in India. Efforts should be taken to mitigate the harmful effects of tourism on the hill environment. In fact, mountain tourism needs to be carefully organized. A proper planning focusing on the vital infrastructural areas will go a long way in harnessing its potential. We have noticed above the antiquity of hills as areas visited by pilgrims. We have also noticed the gradual shift from pilgrimage to modern day tourism in these hilly regions. But we also understand that an unbridled growth of tourism activity in these regions is replete with serious harmful consequences. Our hilly regions are eco-fragile and cannot sustain tourism activity beyond a certain point. Therefore, planning tourism activity in these regions in such manner as to take care of the harmful impact on the region is vitally necessary. Macro-planning for the region must account for ecological and socio – cultural concerns of the people of the region. Possibly then we shall be in a position to adequately utilize this vast and valuable natural resource for tourism purposes.

Hills and mountains have occupied an important place since ancient times, when they were considered abodes of gods. Sages and hermits would meditate and hence lot of reverence and divinity was attached to them in the Indian context. Some like Kailash, Meru, Kishkindha, Govardhan, Vaikuntha were particularly sacred. The modern concept of hill stations which transcends religious connotations and makes them commonly accessible owes much too British endeavours. It aros e with the expansion of European imperialism in the Orient in the nineteenth century. The French established Da Lat in Indo-China, the Spanish built Bagnio in Manila and the Dutch founded several similar centres in Indonesia. But no colonising power built more stations than the British in India. Their rapid growth was due to the real relief they provided from the heat and disease of the plains in summer, while later, after the struggle of 1857, they offered a place of refuge from the reality of life on the plains below.

Not all hill stations were established in a uniform manner. Most of the earliest stations were originally built as army cantonments and were meant to give European troops a breather from the pre-monsoon heat. Some of the more remote cantonments like Chakrata and Jalapahar lingered on in isolation while other more accessible ones attracted civilian attention and soon flourished as social and educational centres.

The resorts nearer to large administrative centres also usually attracted local patronage. Thus, Ooty was summer capital for Madras, Murree for Rawalpindi, Nainital for Lucknow, etc. Others were popular with a particular clientele, e.g., Kotagiri acted as a magnet for planters and box-wallahs, Mussoorie attracted high-spirited young military cadets out for a good time, and Shimla was the preserve of the top military and civilian personnel.

Even the down-market stations enjoyed specialized patronage as Ranikhet catered principally to the signals and armoured corps and Almora drew survey, railway and telegraph staff. Madanapalle attracted mainly pensioned native officials, while Matheran served as a destination for wealthy Parshi merchants. Kodaikanal was not established by the British but by ailing American missionaries.

But two things were particularly there – firstly, hill stations attracted people from nearby or surrounding areas, maybe due to transport problems and secondly, that they had a loyal devoted clientele in the sense that visitor would visit the same place year after year.

The change, from hills catering to the affluent and the influential few to regular holidaymakers, was in part, a product of improved transport and communication networks. Other factors like increasing knowledge and awareness of hill stations, aggressive marketing by tourist agents, leisure time and availability of disposable income also played an important part.

10.4 MOUNTAIN ENVIRONMENT AS A TOURISM PRODUCT

Hills and mountains are having unique ecosystems; their ecological and cultural attributes make them favourite tourist destinations. As 'zones of refugia' they offer ideal conditions for the three R's – rest, relaxation and recreation.

They cater to the varied demands of a vast segment of society. Some of the main reasons behind hill tourism are:

- Summer retreat
- Natural surroundings
- Pilgrimage centres
- Mountain sports
- Floral and faunal diversity
- Adventurists and Explorers
- Miscellaneous

- **Summer retreat** – with their clim atic and geo-morphic conditions they offer ideal summer retreats from the scorching heat of the plains.
- **Natural surroundings** – confluence of various ecosystems; hills, forests, snow, rocks and varied relief and ecological features attract naturalists, bio-scientists, academicians, poets, sightseers, photographers.
- **Pilgrimage centres** – Some of the hill stations also happen to be major pilgrim centres thus attracting huge tourist traffic. Vaishno Devi, Amarnath, Kedarnath, Badrinath, Gangotri, Yamunotri, are just a significant few.
- **Mountain sports** – like mountaineering, trekking as in Leh, skiing, ice skating (as in Kufri, Patnitop), helicopter skiing, river rafting (as in Manali), gliding etc. attract sports enthusiasts.
- **Floral and faunal diversity** – Wildlife and diversity of plant species make them ideal destinations for wildlife lovers. Bioprospectors have of late become a significant tourist component. Nanda Devi Sanctuary would be an example.

- **Adventurists and Explorers** – The mountaneous terrain often lure many adventurers or explorers. Wanderlust accounts for but a small proportion of tourist traffic.
- **Miscellaneous** – factors would include recreation, leave after work, desire to visit friends, relatives, honeymoons, etc.

10.5 IMPACT OF TOURISM ON MOUNTAIN ENVIRONMENT AND WHAT TO DO FOR ITS SUSTENANCE

While dealing with the impacts certain things should be borne in mind:

- Tourism does not necessarily have a negative impact, in many cases particularly in the economic field, it promises a huge growth potential.
- Having said that any analysis of the impacts has to be done with a long term agenda.
- In a strictly cost-benefit analysis the short term gains of tourism might be neutralized by long term losses.
- Environment primarily does connote the physical ecological environment but a comprehensive analysis of the possible impacts would also involve treatment of the local society and economy of the region.
- The impacts thus generated are overlapping, e.g., ecological impact could well spill into the socio-cultural or economic impact.
- Generally speaking, however, it is the unrestrained mass tourism which leaves a trail of disasters.
- Eco-tourism or sustainable tourism on the contrary, are being projected as having positive ramifications.
- There are certain determinants (discussed subsequently) which influence the tourist-impact relationship.
- Purpose, profile, duration, etc. condition the possible impacts of tourism on the local environment.

Impact Determinants: The impact of tourism on hills and mountains is to a great extent conditioned by the following factors:

- The number and duration of stay of the tourists; this is particularly true in the context of 'mass' or 'exploitative' tourism. Thus, the duration of stay in some cases becomes directly proportional to the impact on local environment.
- The sphere of interests of the tourists: sports, relaxation, nature-watch, pilgrimage.
- The fragility of the local environment, the accessibility of the region, the geo-morphological features and the nature of terrain.

- The standard of living and the income of the tourists as well as the areas visited by the tourists (e.g., socio-economic disparity).

- The extent and type of infrastructural facilities, i.e., transport, accommodation, etc.

- The tourists' awareness of the socio-cultural and ecological environment and the resultant behaviour.

- Existing government policies, regulations and guidelines.

While discussing the impacts of tourism on mountain environment another thing that has to be borne in mind is that the word mountain environment does not only connote the physical or the natural landscape, i.e., forests, rocks, ice, climate, but also the cultivated landscape (houses, villages, fields, infrastructural facilities) and the people as well (behaviour, customs, traditions). The net impact of tourism is different in different regions depending on the relative interplay of the factors discussed above. Let us now discuss some major impacts of tourism, both direct and induced on the hills and mountains. For the sake of convenience, let us divide these into three parts, as given below:

- Ecological impacts
- Socio-cultural impact
- Economic impact

- **Ecological impacts:** Tourism's impact vis -à-vis physical environment has come in for a lot of debate. People are becoming ecologically more conscious day by day.

Many humanists and sociologists like Elzeard Bouffier of France, Toyohiko Kagawa of Japan, Sunder Lal Bahuguna of India to name just very few have been raising environmental issues vigorously. Many reports, both national and international have also come up documenting tourism's impact on environment. The German Alpine Club's International Symposium in Munich (1983) and OECD Report on Impacts (1981) merely reflect some early attempts in this direction.

While there may be a difference on the degree or intensity of the resultant problems, it is generally agreed that unregulated tourism tends to destroy forests, consume firewood, creates pollution and over-crowding, endangers ecological balance, threatens the floral and faunal diversity, produces garbage trails, overburdens environment with tourist structures and roads, causes at times natural hazards as also withdraws labour from agriculture, changes the land use pattern, etc. etc. Let us analyse some of these impacts in greater details.

➢ **De-forestation**– By way of building of infrastructural and accommodation facilities or industrial requirements or grazing or firewood collection has led to reduction in forest cover in the hills and mountains. Rich forested slopes have been converted into barren rocks in the name of development activities like roads, hotels, tourist huts, and trekking trails.

Compare this situation with National Forest Policy recommendations which envisages 60% of the mountain areas to be covered with forests, whereas in the case of Himalayas, less than one fifth of the region is under snow cover, 3.7% under high meadow (Bugyals) and nearly 42.3% of the land is denuded of any vegetal cover. It is to be noted that only 4% of forest land comprises good quality trees. The best coniferous forests are degener ating fast, there is a shrinkage in natural habitats and extermination of many plants and animal species. Musk deer, snow leopard, barasingha, etc. are becoming extinct. The dwindling Dal, Manasbal, Wular, Kounsernag Lakes and high incidence of floods in the rivers Jhelum, Sindh and Chenabl coupled with apparent change in marco and micro climatic conditions are some visible manifestations of misuse and mismanagement of various habitat types. Degraded landscapes, ranging from glacial and periglacial areas with depleting snowfields to hill-slopes, foot hills and valleys are also reflective of the human interference. Recent studies of geo-ecosystems in Dhauladhar range and the adjoining areas south of the Punjab Himalayas as also in Uttar Pradesh and Eastern Himalayas have revealed 'erosion damage'. Owing to litho logical, structural, climatological and relief conditions, such areas are highly susceptible to erosional processes, being induced or accelerated by human activities such as over -grazing, tree logging, fuel wood-collection and improper constructions.

➢ **Loss of flora and fauna**– Very much associated with deforestation (in fact it has been mentioned in passing earlier) increasing tourist menace is auguring danger for the floral and faunal wealth. In Nepal, several species like Rhododendron arboreum, Mynica esculenta, Cedrus deodaea, etc. are on the verge of extinction, whereas species like Akies spectabilis, Tsuga dumosa, Rhododendron nivale, etc. are under intense economic pressure. In Nepal mountaineering expeditions primarily account for decimation of biological wealth. In the Uttar Pradesh part of Himalayas, the soils, biomass, flora and fauna and water have suffered a lot due to unplanned encroachment.

Tourism and associated projects have been major destroyers. The Ramaganga dam has submerged a vast area falling under the natural

habitat of tiger and other animal species. Tehri and Jamrani dams have also produced similar effects. Increasing construction at Gangotri is causing great loss to a number of plant species like Chir, Fur, Birch, etc. Heavy utilisation of open tracts adversely affects the biomass. Trampling directly kills plants and causes soil compaction. Increased used of an area changes the microclimate and water balance and thus kills plants. These changes in the local biotic community can lead to eventual loss of the species. Plants are also lost by plucking of wild flowers and leaves by wanderers. Brahmakamal is one such greatly affected variety. Valley of flowers has been at the receiving end. In the case of animals, as has already been said, shrinkage in natural habitats, flourishing souvenir industry, contamination of ecosystems as well as in some places actual hunting have been primary decimating factors.

➢ **Garbage trails and pollution**– Waste production especially solid waste by the hotels like food, vegetable, paper, rags, clothes, bottles or the hospitals like glass, bottles, polythene, gloves, bandage, cotton, plastics, etc. is causing major damage to the local ecosystems. Most of the hill stations lack sewerage and waste disposal facilities. Of particular importance here is the fact that while some wastes are biodegradable others like soft drink bottles, polythene are non-biodegradable and cause immense harm to the environment. Surveys carried out in Kullu Manali Tourist Complex (KMTC) suggest huge amount of daily waste generation. Valley of Flowers also suffers from a similar problem.

In many cases water bodies are choked. Lakes, rivers and ponds become polluted. Dal Lake in Srinagar is heavily polluted, weeded and eutrophied thanks to release of an incredible amount of faecal matter and pathogenic materials from the houseboats. In addition, atmospheric pollution through motor vehicles, aircrafts, road and rail transportation, coal fuel, oil, natural gas, wood fuel and forest fires is also becoming increasingly prevalent. Of late, noise pollution is otherwise silent, serene ecosystems are also a problem to be taken into account.

➢ **Increasing instances of natural hazards**– It is due to disturbances in the fragile eco-systems of the hills and mountains are not unknown. A study conducted by James S. Gardner in Shimla is very illustrative. Increasing tourist traffic in Manali combined with the vulnerability of its eco-system has produced natural disasters. In recent increase in the number of high density multi-storeyed hotels, constructions of buildings in the flood and erosion susceptible areas adjacent to Beas, the development of road network and winter recreation activities has

elevated risks from natural hazards like snow avalanches, earthquakes, flash floods, rock slides, slope failures, etc. The Manali case shares many characteristics with similar situations elsewhere in India.

➢ **Mountain sports**– like trekking, skiing, ice-skating, etc. are producing many undesirous results. Studies conducted in Nepal suggest that trekking and trekker related activities are leading to accelerating rate of deforestation in the Sagarmatha area, thereby destroying the habitat of numerous wild animals and high altitude plants. In India, this has led to the need to close down the Nanda Devi Sanctuary for trekkers and shepherds. Markha valley in Ladakh has also borne the pressure of tourist menace. Likewise, water sports, involving diesel-powered speedboats and motor boats contribute to surface water pollution in many areas. Deviations in land-use patterns are becoming common on many hill stations. The desire for 'quick gains' has led to regression of agricultural activities. In many cases tourism has overlapped agriculture thus creating a tourist monoculture. This is disastrous both, in the long run, both to the economy and ecology of the region. Likewise overcrowding, urban sprawl, shortage of civic amenities when incongruent with the carrying capacity of the region tend to produce harmful effects on the environment. However, in many cases tourism has also served as a tool for conservation and environmental regeneration. If conducted properly tourism awakens ecological consciousness and the need for introducing measures of conservation in sensitive areas of nature monuments and wilderness. Retreat from hillside farming in the most marginal and dangerous areas are another gain.

• **Socio-cultural impact:** While dealing with socio-cultural impacts let us first discuss the mechanisms of tourist-culture interface and then examine case studies if any. Local society and its customs constitute an important tourism resource. Village lifestyle, traditional ceremonies and religious processions, arts and crafts are vigorously marketed by tourist organizations. There is, however, much evidence to demonstrate that traditions and quality of life of the host society can be eroded by mass tourism.

In one of the better known frameworks, Doxey has developed an irritation index which traces the local community's reaction, beginning with a level of euphoria associated with early tourist arrivals through to antagonism when a place becomes saturated with tourists. Doxey suggests that the level of irritation was correlated with the degree of compatibility between host community and the visitors, the location of

tourist accommodation and how much the locals directly benefit through employment and associated perks of the tourist industry. Also important in this regard is the configuration of the tourists. Mass package holiday-makers demanding facilities and levels of service matching metropolitan cities have little interest in understanding of local culture and history.

Such tourists have little interaction with local residents. Studies have shown that tourism at many hill stations has been accompanied by higher prices for craft goods, greed and crime in societies. In addition, the so-called demonstration effect involving the adoption by local residents, particularly younger people, of aspects of tourist life styles, is becoming increasingly common. High levels of expatriate ownership and management, together with resort development that has created private areas for tourists further alienates the local population receiving only limited benefits. Unregulated and insensitive tourism can also lead to dissolution of social cohesion, youth social conflicts, criminality, prostitution and immorality in the host society. Loss of cultural identity promoting commercialization of tradition selling of antiques, vandalism and materialistic thinking also afflict the host society.

Tourism, however, also has a positive side when it comes to the host society. It entails behaviouristic change in the host society when the residents seek to improve their 'image'. It also, in many cases, delays out migration and provides motivation for learning. Preservation of cultural monuments, rediscovery of lost traditions, promotion of current culture, training of new craftsmen and contact with the outside world by way of infrastructure modernization and urbanization are other positive entailments of tourism development.

Let us now have a look at 'Leh' an important tourist destination in order to get a better picture of the state of affairs. Leh in Ladakh was a forbidden land upto 1974. Subsequently it was marketed as 'The Little Tibet'. It is a classic example of how a unique cultural heritage could be ravaged by sudden tourist invasion. It goes on to show how tourism induced development in a backward economy can only result in marginal economic gains with major socio - cultural losses.

Proliferation of external entrepreneurs has led to economic dislocation of the local residents. Some good work has been done by the way of restoration and renovation of monasteries and revival of some art traditions but otherwise Leh has paid a heavy price for the development of tourism. Only a small part of tourist earnings remain inside the region, the

rest being siphoned either to the valley or the lowlands. The sociological cultural front has borne the flood of tourist invasion in a major way.

Lamas are increasingly coming under the influence of western culture. The younger generation has been uprooted from their age old tradition, and local pilgrims are discriminated against the better paying foreigners. Many religious olyeets have become 'wares' for sale and cultural assets and art olyeets have got commercialized and are either being sold or smuggled. In Tibetan culture, 'art' is not a saleable commodity. Leh's example clearly depicts the contradiction between tourism and tradition.

• **Economic impact:** Recreational tourism induces growth at three levels – national, regional and local, although the quantum of this growth may be different at different levels. Let us have a look at some of the possible mechanisms through which tourism affects the economy of a region.

➢ **Tourism related industries and employment potential:** Tourism is not a single industry but a loose confederation of number of these. It is usually classified in the tertiary sector, mainly a service sector. Geographers call it a 'landscape industry' since the products of tourism are made of natural beauty, dramatic landscape and cultural heritage. The development of various segments of tourist industry depends upon the importance and popularity of the tourist places.

Laying down of transport networks like roads, railway tracks, trek routes, rope ways all require a huge labour force for this construction and upkeep. Provision of better accommodation facilities by way of construction of classified hotels, indigenous hotels, tourist bunglows or other state establishments and other types specially tent houses, dharmasalas, etc. is another major responsibility of tourism industry. Souvenir making is another significant component of a good tourism policy. Thus, tourism, we see, is a labour intensive industry. A large number of seasonal works can seek employment such as the masons, carpenters, porters, rickshaw pullers, hotel guides, waiters, tourist guides, escorts, boatmen, pony ow ners, candi carriers, etc. These job opportunities sustain the hill economy to a great extent.

➢ **Income aspects and multiplier effect:** Tourism circulates existing wealth among social groups and geographic regions. The money spent by the tourists goes to the local business in a number of ways. This money in turn is spent on provision of goods and services to the tourists.

Thus, through this multiplier effect one can explain the additional spending or job creation caused by a given level of tourist expenditure. However, the scope of multiplier effect is greatly reduced because of various leakages in the form of import of foreign goods, interest on foreign investments, etc.

➢ **Infrastructure and regional development:** Tourism is an important mechanism to initiate and generate infrastructure development and improvement. The construction of roads, railway lines, airports, electricity and gas supplies, sanitation, water supply etc. which are mainly undertaken to attract the tourists benefit the local residents also by way of provision of civic amenities. Besides, the development of infrastructure prepares the basis for diversification of other economic activities. Thus, regional development is a natural corollary of development of tourism in a region. Foreign exchange, taxi revenues, impetus to local arts, economic diversification – are other accompaniments of development of tourist destinations.

However, there are certain negative aspects of tourism development which should not be ignored. It creates inflationary ten dencies and seasonal dependency besides uneven economic development. Domination of external entrepreneurs, burden on commercial services and over -utilization of scarce resources come along naturally.

Steps for sustenance of mountain environment:

While talking about possible remedial measures and suitable management strategies one could go on endlessly talking about the do's and the don'ts. Thanks to absence of preventing planning in India, we have reached a stage where things have become precarious. All the major hill stations are under tremendous ecological-cultural stress. The present state of affairs does not augur well for the long-term sustenance of this growing industry.

The basic dilemma with tourism and in particular mountain tourism is that the basic capital is landscape. Once it is degraded or damaged, it can hardly be repaired or redressed.

The tragedy with mountain tourism is that as the mountainous regions are trying to emerge from their subsistence economy, they are seized up by modern exploitative forces causing rupture in the ecosystem. Tourism, which in a way was brought to mitigate socio – economic disparities between highlands and the lowlands, has on the contrary widened the gap for the same region. In fact, market mechanism tends to destroy its own resource.

As it is rightly said "Tourism destroys tourism". The irony of the situation as Bilting says is that while the next of the landscape is being paid for, the long-term costs of presentation are not. The need of the hour is to address the issue with urgent sincerity. There could be many possible suggestions in this direction like devising a tourism management plan for every region; a plan that encompasses all-important aspects and is interactive in nature. Such a plan should take into account:

- The ecological aspects, the nature of the terrain, the relative fragility of the ecosystem and the geo-morphic features.
- The macro level tourism development plans should be integrated with the socio – economic development at the micro-level. Integrated rural development schemes, non-conventional energy development, self - employment programmes conservation programmes and tourism development plane should work together as an integrated whole towards a common goal of development without sustainability disturbing the lives of the local people.

Building laws should be made more stringent in the mountainous areas. Multi-storeyed building unsuitable to the local landscape should not be allowed. All the buildings must be built on passive heating designs, so that the spare heating reliance on fuel-wood and imported fuels comes down. Solar waters could be encouraged.

Local people or their representatives should be involved while making tourism plans or administrative boards. Their wishes, aspirations, cultural values and economic necessities should necessarily be taken into consideration.

The quantitative and qualitative aspects of tourism should be addressed sincerely. Controlling the number of tourists visiting a place could be a good starting point. Khajiar in Himachal Pradesh, the mini Switzerland of India is one good example in this regard. The formation of tourists boards on the lines of Vaishno Devi Management or Amarnath Shrine Boards could possibly regulate the tourist traffic. The quality aspect of tourism is equally important. Awareness generation and sensitisation of the tourists to local ecology, culture, economy, etc. could be useful. In fact, the tourist complexes could and should be used for diffusing information both to the tourists and the local populace. Another component of awareness generation could be orientation programmes. Mountaineering courses to promote expedition and the studies of glacial retreats, depleting snowfields, de-forestation are being organised by Geological Survey of India and institutes like Wadia Institute of Himalayan Ecology. Such

attempts need to be streamlined. Audio -visual media could also be used in enlightening the tourists.

A crucial link between the tourists and the local populace and ecosystems are the guides or escorts. Only trained tourist guides should be allowed to entertain tourists.

Diversion of tourist traffic to less frequented sites on a policy level could be of immense help. Development of alternative tourist spots on the likes of Ladakh Sarai near Leh or Span Resorts in Katrain between Kullu and Manali could be very fruitful.

At times regulations and legislations should supplement the efforts taken by other agencies. Thus, any successful management strategy has to be very comprehensive in scope and address all possible ramifications of tourism development. The tourism industry has to take a serious view of this regard not merely through resolutions but through actual practice in their operations.

10.6 A CASE OF HIMALAYAS

G. R. Gruber primarily working in the context of Alps explains tourist movement through the flow charts. As tourism is the movement of people – from say source 'A' to 'B' and then back, four kinds of movements are possible. Although 'A' and 'B' can be locations anywhere in the world for our purposes, let us assume 'B' as places in the highlands. Generally, tourist movement goes on throughout the year but there are two distinct phases of tourist movement i.e. when the summers are on their peak and early snowfall. In additions, the Christmas and other long holidays also at times govern movement of tourist traffic. The Indian subcontinent is dotted by mountain ranges all across; the Himalayas and the associated ranges in the north and north-west, Purvanchal groups in the north-east, the Aravalis in the northwest, the Satpuras, Vindhyas, Eastern and Western Ghats in the peninsular region. There is thus an abundance of hill stations, some of which are not so well known. Graeme D. Westlake, "An Introduction to Hill Stations of India", divides them into four groups; the Himalayan, Central Western and Southern group for a convenient study. In Himalayan Group, following are the places are included for tourist purposes:

- Ziarat
- Nainital
- Ranikhet
- Sheikh Budin

- Almora
- Cherat
- Chaubattia
- Murree
- Darjeeling
- Khaira Gali
- Lebong
- Nathia Gali
- Jabalpur
- Dunga Gali
- Kurseong
- Gulmarg
- Shillong
- Bakloh
- Haflang
- Balun
- Dalhousie
- Dharmsala
- Bharwain
- Chail
- Simla
- Jutogh
- Sabathu
- Solon
- Dagshai
- Kasauli
- Chakrata
- Mussoorie
- Landour
- Lansdowne

Westlake's map shows pre-1947 India and some additions might have been there nevertheless it serves as a useful tool for the distribution of hill stations. The Himalayan resorts, at an average altitude of 6000 feet, offer magnificent views and range after range of jagged snowy peaks. The Western stations are not much over 2000 feet with the highest, Mahabaleshwar, reaching a modest 4700 feet above sea level. They do, however, provide scenic vies and pleasurable walking, not trekking though.

These stations perch on the Western Ghats, a long ridge of volcanic rock running north to south and are full of snowfalls and rarely experience frost. At their southern extreme, the Ghats suddenly descend down into rolling downs and then rise again to plateaux of surprising height. Ootacamund (Ooty) and Kodaikanal are higher than almost any other hill station save the Himalayan group and have a climate almost European in coolness and damp.

General Fact File: The growth of tourism / Leisure in Himalayas:

- The Himalayas cross six countries – Bhutan, Tibet, India, Nepal, Pakistan and Afghanistan.
- The Himalayas began to form when the Indian plate and the Eurasian plate collided.
- The Himalayan range stretches over a distance of 1, 700 miles.
- The highest peak is Mount Everest.
- The dangers of the Himalayas are earthquakes, avalanches, landslides, volcano, eruptions and major floods.
- 20 trekkers in 1964 to 17,000 in 1996
- 350,000 visit Nepal every year - 80,000 trekkers in year 2000
- In peak season tourists and support staff outnumber locals by a factor of 5
- 80% of locals in Khumba area rely on tourist trade.
- Lodges/Hotels have increased from 7 1n 1973 to 224 in 1997

Waste Disposal / Garbage: Recent figures estimate 17 metric tons of garbage per Kilometre of tourist trail exist. 50 tons of garbage now litters Everest including tin cans, wrappers, bottles, clothing, human waste & dead bodies. 2,00,000 water, beer and other beverage bottles are left on the trail every year.

In 1998 the following was removed from the mountain 325 kg of burnable trash, 200 kg of biodegradable waste, 100 kg of recyclable material, 157 oxygen bottles, 216 gas canisters & 520 batteries.

Human waste buried near to camp sites results in seepage into rivers creating water pollution and tourists relying on bottled water as a result.

Fuelwood: One 41 bed hostel uses 15 porter loads of fuelwood a week

Although deforestation is banned in the National Park - there is increased pressure on surrounding areas.

Footpaths / Roads: 12% of trails have been severely damaged. New roads to enable easier access have been planned with blasting as means to cut through the mountains.

Other Problems: Over reliance on tourism has damaged farming industry which cannot pay as well - locals have to compete with the prices of food stuffs at markets such as Namche Bazaar.

As most waste cannot biodegrade and due to climate most of what can, takes many years longer than warmer climes garbage is constantly building up. Due to short growing season and general climate vegetation is slow to grow so any degradation or replanting schemes take longer to recover.

10.7 SUMMARY

Macro-planning for the region must account for ecological and socio – cultural concerns of the people of the region. Possibly then we shall be in a position to adequately utilize this vast and valuable natural resource for tourism purposes. Hills and mountains have occupied an important place since ancient times, when they were considered abodes of gods. Sages and hermits would meditate and hence lot of reverence and divinity was attached to them in the Indian context. Some like Kailash, Meru, Kishkindha, Govardhan and Vaikuntha were particularly sacred.

Hills and mountains are having unique ecosystems; their ecological and cultural attributes make them favourite tourist destinations. As 'zones of refugia' they offer ideal conditions for the three R's – rest, relaxation and recreation. They cater to the varied demands of a vast segment of society. Some of the main reasons behind hill tourism are summer retreat, Natural surroundings, Pilgrimage centres, Mountain sports, Floral and faunal diversity, Adventurists and Explorers and Miscellaneous.

The impact of tourism on hills and mountains is to a great extent conditioned by the factors like the number and duration of stay of the tourists; this is particularly true in the context of 'mass' or 'exploitative' tourism. Thus, the duration of stay in some cases becomes directly proportional to the impact on local environment. The sphere of interests of the tourists: sports, relaxation, nature-watch, pilgrimage.

The fragility of the local environment, the accessibility of the region, the geo-morphological features and the nature of terrain. The standard of living and the income of the tourists as well as the areas visited by the tourists (e.g., socio-economic disparity). The extent and type of infrastructural facilities, i.e., transport, accommodation, etc. The tourists' awareness of the socio-cultural and ecological environment and the resultant behaviour and existing government policies, regulations and guidelines. While talking about possible remedial measures and suitable

management strategies one could go on endlessly talking about the do's and the don'ts. Thanks to absence of preventing planning in India, we have reached a stage where things have become precarious. All the major hill stations are under tremendous ecological-cultural stress. The present state of affairs does not augur well for the long-term sustenance of this growing industry.

The Indian subcontinent is dotted by mountain ranges all across; the Himalayas and the associated ranges in the north and north-west, Purvanchal groups in the north-east, the Aravalis in the northwest, the Satpuras, Vindhyas, Eastern and Western Ghats in the peninsular region. There is thus an abundance of hill stations, some of which are not so well known. Graeme D. Westlake, "An Introduction to Hill Stations of India", divides them into four groups; the Himalayan, Central Western and Southern group for a convenient study.

Westlake's map shows pre-1947 India and some additions might have been there nevertheless it serves as a useful tool for the distribution of hill stations. The Himalayan resorts, at an average altitude of 6000 feet, offer magnificent views and range after range of jagged snowy peaks. The Western stations are not much over 2000 feet with the highest, Mahabaleshwar, reaching a modest 4700 feet above sea level.

10.8 EXPECTED QUESTIONS
1. Write a brief note on the importance of mountains in India?
2. Explain mountain environment as a tourism product?
3. What is the impact of tourism on mountain environment?
4. Enlisted the various types of impacts on mountain environment?
5. Describe the suggestive measures for sustenance of mountain environment?

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UNIT 11: TOURISM, NATIONAL PARKS AND WILDLIFE CONSERVATION – CASE EXAMPLES

STRUCTURE:

11.1   Introduction

11.2   Objectives

11.3   Environmental Impacts and components of wildlife management

11.4   Documentation, policies and strategies of National Parks and Wildlife in India

11.5   Conservation Projects of National Parks and Wildlife in India

11.6   National Parks and Wildlife tourism in India

11.7   Summary

11.8   Expected Questions

11.9   References

11.1 INTRODUCTION

The term "Wildlife tourism" can be an eco and animal friendly tourism, usually showing animals in their natural habitat. Wildlife tourism, in its simplest sense, is watching wild animals in their natural habitat. Wildlife tourism is an important part of the tourism industries in many countries including many African and South American countries, Australia, India, Canada, Indonesia, Bangladesh, Malaysia and Maldives among many. It has experienced a dramatic and rapid growth in recent years worldwide and is closely aligned to eco-tourism and sustainable-tourism. Wildlife tourism is also a multi-million dollar industry offering customized tour packages and safaris.

On the other side, a "national park" is a park in use for conservation purposes. Often it is a reserve of natural, semi-natural, or developed land that a sovereign state declares or owns. Although individual nations designate their own national parks differently, there is a common idea: the conservation of wild nature for posterity and as a symbol of national pride.

The proper understanding of environmental impacts is crucial for

the future of tourism. Wildlife, forests, mountains, islands and beaches, etc. are the natural resources that bear the impact of tourism.

There is an ongoing debate whether wildlife should be open to tourism or not. This debate is centered around the impacts of tourism on wildlife (both positive and negative).

In this Unit, we shall analyze various environmental impacts and components of wildlife management. In the process, as a case study, we will try to explore the problems of wildlife protection in both pre and post independence India and also conceptualize the evolution of various policies, programmes and projects. While enumerating the possible components of wildlife management, we shall also elaborate upon these components. An attempt will also be made to discuss the loopholes and drawbacks in India's wildlife management strategy and how these can be taken care of. However, we start this Unit with a brief discussion on environment impacts of tourism in general.

11.2 OBJECTIVES

After reading this unit the learner will be able to:
- To enlisted the components of wildlife management
- To have an understanding of conservation projects
- To know about the evolution of wildlife policy in India
- To know briefly about wildlife legislation
- To appreciate the role of various agencies in the natural parks and wildlife conservation

11.3 ENVIRONMENTAL IMPACTS AND COMPONENTS OF WILDLIFE MANAGEMENT

Environmental Impacts: For a long time the emphasis remained on economic aspects as far as the understanding of tourism impacts was concerned. It was gradually realized that more important is to analyze the impacts on the tourism resources, nature and environment being the prominent ones. Any devastation of natural resources would ultimately lead to the devastation of all economic gains, leave aside tourism along. If one destination declined because of environmental exploitation, the tourists, in the short run will move to another one. But how many destinations can be destroyed like this and how many new destinations tourism will find? There is an ongoing debate on the tourism impacts on environment:

- According to one view tourism leads to protection of environment and the proponents of this view cite examples of wildlife sanctuaries, waterfalls, etc.
- On the other hand is the view that tourism effects the environment in almost all aspects be it water pollution or air pollution to the overuse of natural resources.
- Another view gives a clean chit to tourism but accuses the tourism industry and bad management which leads to environmental degradation.
- Many compare the environmental impacts of tourism with those of the other industries. Some have gone to the extent of describing tourism as a smokeless industry.
- No one view can be accepted or can hold true for all tourism destinations. The nature of impacts would vary from destination to destination. No doubt, the positive impacts have to be spoken well off but more crucial is to understand and analyze the negative impacts. Only then we will be able to initiate measures to mitigate them and plan for tourism.

Components of wildlife management:

Wildlife management is a complex job. A comprehensive set of issues to be addressed in the formulation of any strategy or action plan. Any strategy has to be a multi-pronged one protecting both, the animal and its habitat and ensuring continuity of any species.

Let us now discuss some of the important components of wildlife management. Survey and documentation: There has to be a major sustained effort to survey and document different forms of wildlife. In India many institutions and universities are involved in this task.

- **Conservation projects:** Several conservation projects have been launched by the government for both in-situ and ex-situ conservation of wildlife.
- **Legislations and enactment:** Conservation efforts have to be supplemented by acts and legislations. Wildlife (Protection) Act 1972 and Prevention of Cruelty to Animals 1960 are two notable examples.
- **International conventions:** The conservation of wildlife has to be an international effort. India is a signatory to many global conventions on wildlife.
- **Wildlife tourism**: As a policy matter has to be carefully regulated.

- **Education and awareness generation:** Every effort should be made to educate the masses about the importance of wildlife conservation.
- **NGO and people's involvement:** The efforts of the government should be amply substantiated by people's support.
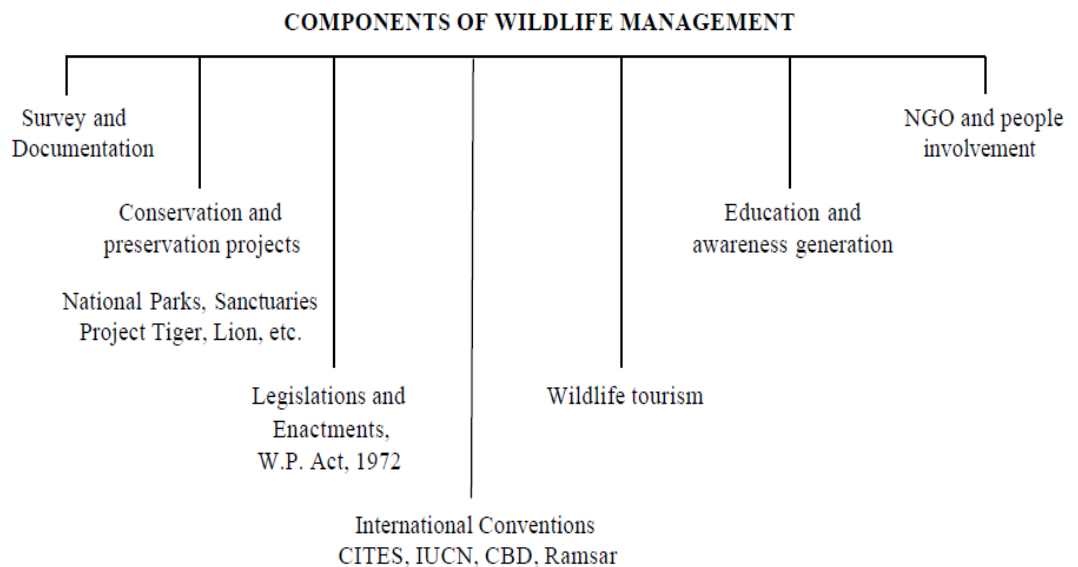

Fig. 11(a): Components of Wildlife Management

Management of wildlife is a multi-faceted job. Merely enacting legislations or setting up national parks is not a solution. Any approach to wildlife conservation has to be a total approach where all elements, animals, plants, microorganisms, their habitats, etc. have to be incorporated. Sometimes international agreements also need to be arrived at in this regard. The overall set-up is shown in Fig. 11(a).

MANAGING THE ENVIRONMENT IN INDIAN PERSPECTIVE

Introduction: The Planning Commission of India has identified twelve Strategy Challenges for the 12th Plan Approach Paper. "Managing the Environment and Ecology" with the following five components is one of the Challenges:

- Land, mining and Forest Rights
- Mitigation and Adaptation Strategy for Climate Change
- Waste management and Pollution Abatement
- Degradation of forests and loss of biodiversity
- Issues of Environment Sustainability

Expectations: The general expectations of the citizens with respect to environment are: Access to clean air, water, and soil; Right to Natural resources; Sustainable Livelihoods and healthy surroundings.

Suggestions: Detailed below are some suggestions in respect of, Policy, legislation, both national and international, institutional mechanisms, infrastructure, and Science and technology in the management of Environment and Ecology and specific suggestions with respect to the five components.

Institutionalize a holistic, integrated approach for the management of environment and natural resources, converging national regulations and international protocols in relevant sectoral and cross-sectoral policies, through review and consultation.

Evolve schemes to encourage trading in air and water pollutants in industrial complexes. Establish on-line continuous monitoring systems to enable trading of pollutants and encourage public and private sector participation in GHG emission trading.

Identify emerging areas for new legislation, including our obligations under multilateral environmental regimes and review the body of existing legislation.

Ensure accountability of the concerned levels of Government (Centre, State, Local) in implementing existing legislation and introducing necessary legislation, wherever required in a defined time-frame, ensuring the livelihoods and well-being of the poor and improved access to the necessary environmental resources.

Promote research and the use of information technology based tools, together with necessary capacity-building. Bring about transparency through public web-portal for national resource accounting for Non Wood Forest Produce (NWFP), common property resources, usufruct rights etc on GIS platform.

Encourage Industrial Associations to shoulder greater responsibility of environmental management, implementation of regulation, including drafting strategy on issues on environment and trade that affect industry.

Develop multiple models, for rapid and effective restoration, of open and degraded forests, wastelands and urban areas through PPP and community participation.

Introduce Performance monitoring and development of Environment performance linked financial devolution mechanisms to states.

Setup regional databases on natural resources to support the information requirements of planning and prepare inventory through land cover mapping (Remote Sensing, 1;4000 scale). Review the list of International Conventions to which India is a signatory and party to fix a timeframe to ratify and fulfill obligations under these Conventions. Put in place rules and guidelines in the Area of Access and Benefit sharing , trade especially exports in LMO's and GMO's in respect of Biological Resources.

12th plan should focus on leadership role for India in SAARC, ASEAN, and SACEP, including serving as repository of information and help train in early warning systems for disasters. A Strategy and action plan should be drawn up to forge partnership among countries in the region.

TIFAC be commissioned to list 10 cutting edge technologies for possible exhaustive studies and field trials in environment sector. Strengthen Scientific Research, Technology Development and Human Resource in areas of environment and ecology which are critical for Sustainable Development.

11.4 DOCUMENTATION, POLICIES AND STRATEGIES OF NATIONAL PARKS AND WILDLIFE IN INDIA

Evolution of wildlife policy in India: Conservation and protection of wild animals has been there in the informal domain since time immemorial. One can cite the Ashthom inscriptions in this regard in ancient India besides numerous other literary texts. However, it was only with the coming of the British and later in the post colonial India that formal acts aimed at direct or indirect management of wildlife were taken up. Let us now have a look at the efforts made in the direction.

* **Pre-Independence Period:** Wildlife conservation and management has been in Indian way of life and ethos for a long period of time now. In ancient times, the concept of 'aranya' with all its con-commitants was a respected concept. Many animals were deified in the evolving religions and many gods and goddesses themselves came to be associated with wild animals. Indian mythology is replete with stories associated with the importance of preserving life forms. There was, however, no formal policy of conservation or preservation. The first recorded game laws promulgated by Kautilya in the 3rd century B.C. were an attempt to regulat e the hunting of wildlife. It was assumed that if forests were preserved, wildlife would flourish. The notion of 'hunting reserves' of the ancient times

or 'shikargah' of the medieval times, however, also flourished side by side. When the British took over, the balance between the natural regeneration of forest cover and human consumption started breaking. With the conversion of the forests into an industrial resource, ruthless decimation of forest cover took place. No wonder, wildlife suffered tremendously. Side by side the state forests, private forests also co-existed which were basically a hunting domain for the big zamindars and the royal houses. The Colonial forest policies also tried to nationalise the exploitation of the forest resources. The only change in relation to wildlife policy during the colonial regime was the amendment of the Indian Forest Act, 1927 and the introduction of the Indian Game Act, 1935. Done with the intentions to give a legal status of wildlife conservation, this was not an effective piece of legislation.

• **Post-Independence Period:** The post-independence phase was hardly different initially. However, one major qualitative change, however, was the abolition of proprietary rights in forest and removal of the colonial totalitarian controls. The use of forest resources continued unabated. Forest development had to pave way for agriculture and other development projects. Industries (particularly forest based), irrigation schemes, power projects, mining leases, etc. were promoted at the cost of forest cover. The first step towards wildlife preservation was taken with the constitution of Indian Board for Wildlife in 1952. This body was only an advisory body to the government on matters related to wildlife. Thereafter, there was a huge gap. Forests continued to be exploited and wild animals continued to suffer. Many animals like cheetah, mountain quail, and pink-headed duck became extinct. Others like Asiatic lion (Gir forests of Gujarat), Hangul (Kashmir), brown antlered deer (Manipur), etc. became regionally confined. Still others like tigers, Gangetic gharial, marsh mugger, Great Indian bustard and white winged wood duck massively dwindled in numbers. This is in addition to many species which became extinct without being noticed. No major policy decision, however, was taken. Only very general programmes, (centrally sponsored) were initiated. It was only in 1972 that the Wildlife Protection Act was enacted to protect the rapid rate of decline of wildlife. Almost simultaneously in 1973-74, "Assistance for Development of National Parks and Sanctuaries" was implemented as a part of the fourth five year plan. The plan allocations for wildlife conservation went up from 664 lakhs in the fifth five year plan to Rs.1244 lakhs in the sixth plan. 1981-82 saw the introduction of a central scheme for assistance for development of selected zoos.

Under this financial and technical support is provided to selected zoos in the country. Wildlife Exhibitions also started around the same time. These efforts climaxed in the establishment of the Wildlife Institute of India in 1982. But as yet a clear positive policy aimed at wildlife conservation did not take shape. It was only with the formulation of an action plan in 1983 that some broad guidelines were laid in this regard. By and large, the general governmental philosophy had been "TAKE CARE OF THE FORESTS AND WILDLIFE IS TAKEN CARE OF AUTOMATICALLY". Let us now discuss some of the milestones in the evolution of wildlife policy.

Landmarks in Policy evolution:

EVOLUTION OF WILDLIFE POLICIES

Wildlife Advisory Committee, 1996

National Wildlife Action Plan, 1983

Development of National Parks and Sanctuaries

Wildlife Protection Act, 1972 (amended 1991)

Prevention of Cruelty to Animals Act, 1960
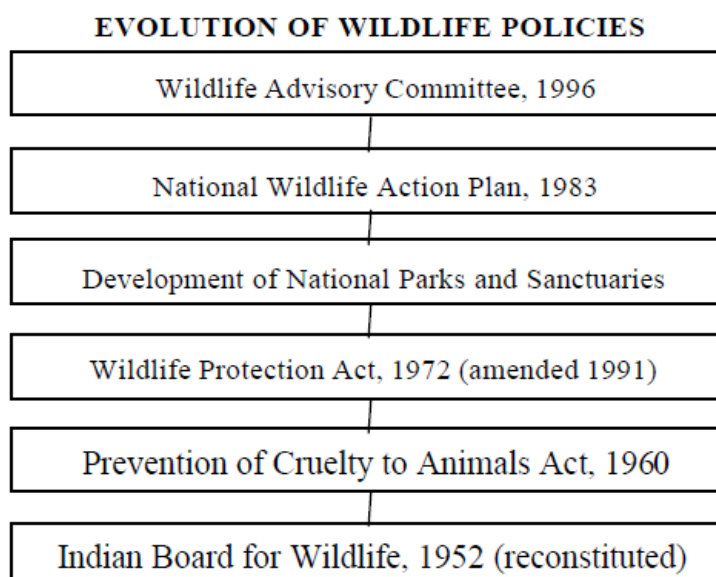
Indian Board for Wildlife, 1952 (reconstituted)

Fig. 11(b): Evolution of wildlife policies

In this section, we discuss some of the milestones in the evolution of wildlife policy of India. Indian Board for Wildlife (1952) was formed to advise the Government on wildlife matters. It is the apex advisory body and has been reconstituted over a period of time. At present, it is headed by the prime minister and consists of 10 non-officials, 5 NGOs, 2 MPs and 30 official members. Wildlife (Protection) Act, 1972 was enacted to govern all aspects of wildlife conservation and protection of endangered species. It was adopted by all states excluding Jammu and Kashmir which has its own act. It attempts three-tired protection of wildlife:

- Protecting the survival interests of the animals, e.g., hunting prohibited.

- Protecting the habitat, e.g., national parks, sanctuaries, game reserves, etc.
- Protecting trade and commerce in wild animals and trophies.

WPA has certain peculiar features:

- Wildlife is defined in a very technical sense. Under the provisions of the Act, wildlife includes any animal, bees, butterflies, crustacean, fish and moths; and aquatic on land vegetation which forms part of any habitat.
- It divided animals into five schedules. Schedule 1 animals are treated as the most prized animals, to be protected at any cost.
- It calls for control of poaching and illegal trade in wildlife products.
- Provides for captive breeding programmes for endangered species of wildlife as also for wildlife education and interpretation.
- Provides for development of zoos.
- Conservation of rhinos in Assam and protection of tiger, elephant, etc.
- Provides for penal liabilities for different categories of offenders.

The act also envisages an administrative infrastructure. Under the provisions following persons have to be appointed:

- A Director of Wildlife Preservation at the centre assisted by 4 Regional Deputy Directors to be posted at Kolkata, Bombay, Delhi and Chennai.
- At the state level – A Chief Wildlife Warden assisted by wildlife Wardens. The act also enjoys all the states and union territories to appoint Wildlife Advisory Board.

The Wildlife (Protection) Act, 1972 was amended in 1991 to make it more effective in terms of penalties, procedures and legal protection to forest and wildlife staff. An inter-state committee has also been set up to revie w the Wildlife (Protection) Act, 1972 and other laws. A comprehensive idea of WPA, 1972 and the amendment can be had from the Appendix. National Wildlife Action Plan (NWAP) resulted from the deliberations of the Indian Board for Wildlife in October, 1982. It laid a broad framework on which wildlife policy could be based. NWAP is in tune with "World Conservation Strategy", the "World Charter for Nature" and the "Bali Action Plan". As has already been said, its genesis is traced to Prime Minister's statement in the 15th meeting of Indian Board for Wildlife. The action plan aims to preserve and conserve our rich heritage. It comprises:

- Establishment of representative network of protected areas
- Management of Protected Areas and habitat restoration

- Wildlife protection in multiple use areas
- Rehabilitation of endangered and threatened species
- Captive breeding programmes
- Wildlife education and interpretation
- Research and monitoring
- Domestic legislations and International Conventions
- National Conservation Strategy
- Collaboration with voluntary organizations / bodies

The action plan thus provides only the framework of strategy and the programme for wildlife conservation. Though it is basically a set of guidelines, its importance lies in the fact that for the first time wildlife issues have been addressed positively and independent of a general forest policy. Given the fact that an inter - state committee is looking into the functioning of Wildlife (Protection) Act 1972 (amended in 1991) and other related areas, the action plan will be of great help to it in the formulation of a comprehensive wildlife policy.

Wildlife Advisory Committee has been constituted on 17th October 1996 to advice on various aspects of wildlife conservation and related matters.

Some other Strategies for National Parks and Wildlife Conservation in India: Apart from the policy matters and legislations, there are various other ways through which government seeks to promote wildlife conservation and protection. Let us discuss the major ones.

National Co-ordination Committee has been formed under the chairmanship of Additional Inspector General of Forests (Wildlife) to promote effective inter -departmental co-ordination for the control of illegal trade in wildlife and wildlife products.

Eco-development in and around National Parks and Sanctuaries: The centre has been providing assistance to states for pursuing programmes of Eco-development around National Parks and Sanctuaries including tiger reserves to achieve ecologically sustainable economic development of these areas and to reduce the biotic pressure on protected areas to ensure conservation of eco-systems.

Regulation of EXIM Policy trade and commerce is strictly regulated under Wildlife (Protection) Act, 1972 within our country. External trade is governed by export policy which is stringent in relation to wildlife. Only a very limited number of common animals and their derivatives are allowed to enter the export market.

Wildlife Education and Training though a network of forest colleges as well as Wildlife Institute of India forms an integral component of wildlife conservation as are the zoos and botanical gardens.

Awareness generation and promoting public participation in wildlife conservation is achieved through a variety of ways. Wildlife Week is celebrated every year. Awards and Fellowships like Rajiv Gandhi award and Salim Ali / Kailash Sankhla Fellowships are instituted by the Ministry of Environment and Forests for giving recognition to eminent officers and fieldworkers for exemplary work in the field of wildlife conservation and research. A Task Force has been set up by Indian Board of Wildlife to draw up report for eliciting public support. Audio Visuals on wildlife play an important role in mobilising public opinion for the cause.

At the same time for purposes of tourism in wildlife areas various methods are adopted to promote responsible tourism:

- Sensitizing the tourism as well as tour operators,
- Training programmes for forest guards,
- Timings in national parks and sanctuaries, etc.

Documentation for National Parks and Wildlife Conservation in India:
India has a strong network of institutions mapping various life forms and undertaking taxonomic studies. The three premier institutions in this regard are:

- Botanical Survey of India
- Zoological Survey of India
- Forest Survey of India

Now let us discuss these organizations briefly.

The Botanical Survey of India was established in 1890 with the objectives of surveying and identifying the land resources. It has its headquarters in Kolkata and there are nine circles located in different phyto-geographical regio ns of country. The Zoological Survey of India established in 1916 has its headquarters at Kolkata. It has 16 regional stations established in different parts of the country. Its main objective is exploration and survey of faunal bio-diversity of the country.

The Forest Survey of India was established in 1981 and has its headquarters at Dehradun. Its four regional offices are at Bangalore, Kolkata, Nagpur and Shimla. It's objectives are to prepare a state of forest report and national forest vegetation map every two years, prepare thematic maps using remote sensing data, collect, store and retrieve

necessary forest related data for national and state level planning and to create a computer based national basic forest inventory system.

In addition to these three organizations, the National Institute of Oceanography and several other specialized institutions and universities further strengthen India's survey and documentation capabilities. At the same time we must acknowledge that documentation related to wildlife tourism is not weak but fragmented also.

11.5 CONSERVATION PROJECTS OF NATIONAL PARKS AND WILDLIFE IN INDIA

Many conservation projects have been launched with the aim of long-term survival of wildlife. The following flow chart gives some idea of the kind of approach being adopted.
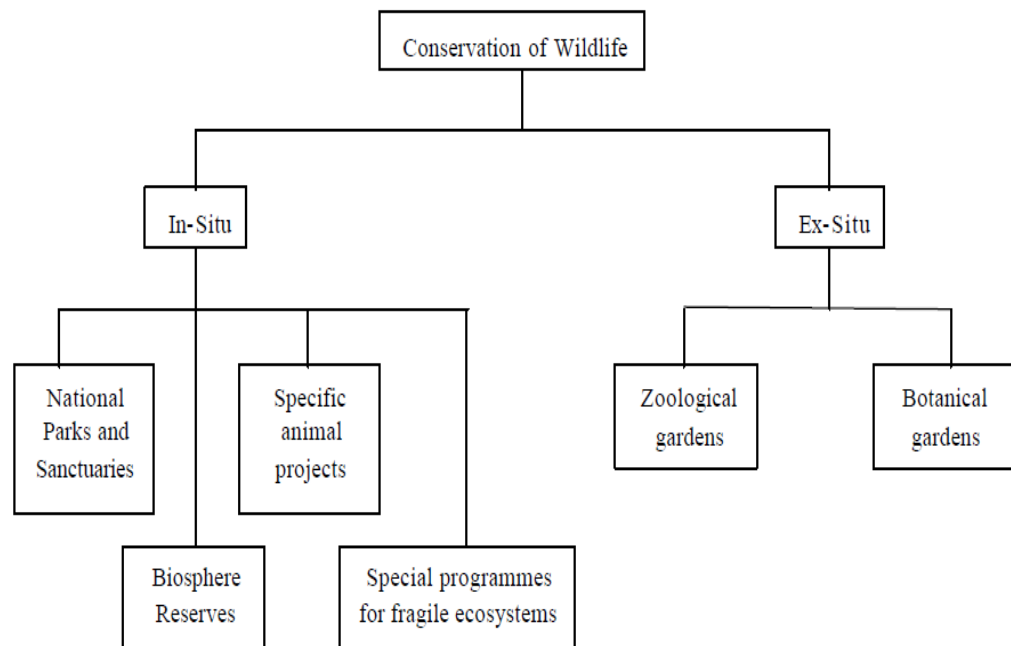

Fig. 11(c): Conservation of Wildlife

• **In-Situ Conservation:** In-situ conservation aims at the conservation of wild species in respective habitats and eco-systems. Let us now discuss some aspects of in-situ conservation. Protected area network, National parks and sanctuaries and Resources. Any area where special protection is offered to wildlife is called a protected area. Let us understand the connotation of certain terms.

National Park is an area dedicated to conserve the environment, natural and historical objects and to conserve the wildlife therein, and at

the same time, to provide for enjoyment from them for compromising with the long-term survival of the park. In such parks, all private rights are nonexistent and the forestry operations and other usages such as grazing of animals are prohibited.

Wildlife Sanctuary is a sanctuary where killing, hunting, shooting or capturing of any species of birds and mammals is prohibited except with prior authorised permission. Private ownership rights and forestry and other usages may be permitted to the extent that they do not adversely affect wildlife.

Reserves and areas demarcated for the protection of wildlife:

Biosphere Reserves: The Biosphere Reserve programme is a pioneering effort towards conservation of bio-diversity. The Biosphere Reserves set so far not only aim to protect the representative eco-systems but also serve as laboratories for evolving alternative models of development. 8 Biosphere Reserves have been set up so far.

Efforts are on to set up Biosphere Reserves in Little Rann of Kutch, Gujarat; Dehang-Debang in Arunachal Pradesh; Kanchenjunga in Sikkim; the Cold Desert area adjoining Himachal Pradesh and Jammu and Kashmir, Abyhmarh, Kanha, Panchmarhi and Amarkantak in Madhya Pradesh.

Specific Animal Projects: The government of India has launched specific conservation projects for individual endangered species. Over the past projects like Hangul (1970), Lion (1972), Tiger (1973), Crocodiles (1974-75), Brown-antlered Deer (1981) and Elephant were launched. Let us now discuss some of the major projects.

The Gir Lion Project is located in Gir forests of Gujarat. It was launched by the Government of Gujarat in 1972. Apart from conservation of the lions in their national habitat, it also provided for the social upliftment of the pastoral maldhari tribes, whose cattle frequented the lion habitat.

The Crocodile Breeding Project was undertaken from the 1st of April, 1975 for all three types of crocodile species found in India, based on the advice of a FAO expert. (3 species are Gharial, Saltwater crocodile and Mugger or freshwater crocodile).

Project Tiger: This centrally sponsored scheme was launched on 1st April, 1973 to ensure a viable population of tigers in India. For scientific, economic, aesthetic, cultural and ecological values. It also aimed at preservation for all times to come areas of such biological

importance as national heritage for the benefit, education, and employment of the people. At present there are 23 Tiger Reserves (2 more are in offing) in 14 states of our country, covering an area of 33,000 sq. km.

Project Elephant was launched in 1991-92 to assist states having free ranging populations in wild elephants to ensure long term survival of identified viable populations of elephants in their national habitats. States are being given financial, technical and scientific assistance to achieve the objectives of the project.

Specific Programmes for fragile ecosystems – There are programmes also for such ecosystems like Coral reefs, Mangroves and wetlands. Let us first familiarize ourselves with such ecosystems.

Wetlands which include a wide range of inland, coastal and marine habitats share the characteristic of both wet and dry environments. They exhibit enormous diversity based on their genesis, geographical location, hydrological regimes and substrate factors, and include marshes, flood plains, tidal marshes, swamps, etc. Wetlands are important.

Mangroves are salt tolerant forest eco-systems found mainly in tropical and sub-tropical intertidal regions of the world. They are reservoirs of a large number of plant and animal species. Coral Reefs are shallow-water tropical marine ecosystems, characterized by a remarkably high biomass production and a rich floral and faunal diversity.

Realizing the importance of these fragile ecosystems, the government has constituted a national Committee on Wetlands, Mangroves and Coral Reef, to advise it on policy guidelines for implementing programmes on conservation, management and research of these ecosystems. Based on the recommendations of this committee many specific schemes have been launched for Mangroves, Coral Reefs and Wetlands, for intensive conservation and management. State level Steering Committees have also been set up to facilitate these objectives.

- **Ex-Situ Conservation:** Ex-situ conservation involves conservation of species outside their respective habitats and ecosystems. This includes zoological and botanical gardens. Zoological Gardens: There are around 275 centres of ex-situ wildlife preservation in the form of zoos, deer parks, safari parks and aquarium. A Central Zoo Authority supports, overseas, monitors and co-ordinates the management and development of zoos in the country. The zoological parks are essentially looked upon as centres of education and recreation and have played an important role in

conservation of species such as Manipur Thamin Deer and White-winged Wood Duck.

Botanical Gardens: There are around 70 Botanical Gardens including 33 University Botanic Gardens. Several schemes have been launched to assist the botanical gardens.

Legislation and Enactments: The urge to conserve wildlife resources and prevent gene-erosion manifests itself in enactment of various legislations. The Wildlife Protection Act (1972) is the supreme legislation in relation to the protection of wildlife. The Wildlife Act has already been discussed upon in the earlier Sections of this Unit.

Besides there are other legislations, though not so direct, as well to aid the cause of wildlife conservation. The various forest acts (Indian Forest Act 1927, Forest Conservation Act, 1980), Environment Protection Act, the acts related to biodiversity as also the legal status of national parks, sanctuaries and conservation projects are also of paramount importance in the preservation of wildlife. The Prevention of Cruelty to Animals Act 1968 and the Animal Welfare Board have their own role to play in wildlife management.

11.6 NATIONAL PARKS AND WILDLIFE TOURISM IN INDIA

Historically and culturally, forests and all forms & wildlife in them, have played a very important role in the Indian way of life. Plants and animals have even been worshipped over the centuries and thus the importance accorded to them. According to estimates the forests, the deserts, the mountains and swamplands of India sustain over 350 species of mammals 2,100 kinds of birds - both local and migratory, 350 varieties of reptile and innumerable insects. Each sanctuary has several species of mammals and birds but is sometimes known for one particular species. For instance the Sultanpur Sanctuary in Haryana is known for the large contingent of migratory birds from October onwards every year and Gir in Gujarat for its lions. About 80 National Parks and 441 Sanctuaries have been created to protect this life from the onslaught of urbanization and rapidly increasing population.

Wildlife Sanctuaries and National Parks in India: There are a number of wildlife sanctuaries, and National parks all over this vast country which are well preserved. They cover hundreds of square kilometres and the varied wildlife can be observed here in their natural habitat. Apart from this, the Government of India initiated Project Tiger which covers almost

25,000 sq. km. of space in 15 reserves. This has helped in increasing the numbers of tigers, over the years.

Some of the major wildlife sanctuaries and national parks in India are located in Andaman & Nicobar Islands, Assam, Bihar, Goa, Daman & Diu, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Orissa, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, and West Bengal.

Mount Harriet National Park in the Andaman & Nicobar Islands hosts the Andaman wild pig, saltwater crocodile, turtle and robber crab. The best time to visit is January and February. There is also the Saddle Peak National Park famous for bird and the Andaman teal. Best time to visit is November to April. The Andamans also have Marine National Park. **Kaziranga National Park in Assam** is famous for the one-horned rhinos, of which the park has a sizeable number. Apart from this, there are tigers, wild buffaloes, elephants, barasingha, hog deer, wild boars, leopards and leopard cats, and a large variety of birds. The best time to visit Kaziranga is October to March. **Hazaribagh National Park in Bihar** showcases the tiger, leopard, sambar, chital, and wild boar and the best time to visit is October to March. **Palaman (Betla) National Park in Bihar** is also a Tiger Reserve and is best between October and May. It was once the homeland of the now extinct Indian cheetah, but you can still view the tiger, leopard, wolf, wild dog, jungle cat and the barking deer, here. **Bhagwan Mahavir National Park** spread across Goa; Daman & Diu houses the gaur, sambar, mouse deer, barking deer, flying squirrel, and porcupine. Best time to visit is October to March. Spreading over a large area in Gujarat, the **Gir National Park** (also a Lion Sanctuary) is best visited from October to June for a view of the Asiatic lion, panther, sambar, and the four-horned antelope.

The **Velavadar National Park** also in Gujarat hosts the blackbuck and the wolf. Best time to come here is October to May. **The Nal Sarovar Sanctuary in the state of Gujarat** is known for its flocks of flamingoes and other birds which abound from October to February. **The Great Himalayan National Park** in Himachal Pradesh houses the snow leopard, mountain goat, yak cranes, and brown & black bears. The best times to view them are from April to June and from September to October.

The state of Jammu and Kashmir has two national parks namely **Dachigain and Kishtwar**. While Danchigam is famous for its endangered Kashmir Stag called Hangul, it also has the Himalayan black bear, brown bear, leopard, hill fox, jungle cat, Himalayan weasel, and long - tailed

marmot among others. The best time to visit in August to December. **The Kishtwar National** Park is best visited from May to October and includes snow leopard, antelope, wild yak and the Tibetan ass. **The Bandipur National Park**, adjoining the Madhumalai sanctuary in Karnataka welcomes you all the year round with its inhabitants comprising the tiger, elephant, gaur, chitals, wild dog and sloth bear. **The Nagarhole Park** also in Karnataka welcomes visitors all the year round and has a host of elephants, tigers, panthers, chitals, sambars, sloth bears, and the gaur. The small state of Kerala has three major national parks; **The Eravikulam Park** is open throughout the year and houses elephants, gaurs, sambars, lion-tailed macaque, and the famous Nilgiri tahr. **The Periyar Park** has a large number of elephants, gaurs, wild dogs, sambars and can be best viewed from September to May. **The Silent Valley National Park** houses elephants, wild boars, panthers, sambars, and the lion-tailed macaque which can be seen from September to March, best.

In the state of **Madhya Pradesh** there are three national parks namely Bandhavgarh, Kanha and Pench and the best time to visit them is November to June. **The Bandhavgarh Park** spreads over 32 hills and is one of the best places to watch tigers, and panthers, apart from the chitals, gaurs, sambars and the nilgai. **The Kanha Park** spreads over 1,945 sq. kms and is famous as the tiger land. Apart from the tiger it is home to panthers, barasingha, black buck, barking deer, mouse deer, nilgai, wild dog, chital and sambar. **The Pench National Park** is also a good place to watch the tiger, panther, gaur, chital, sambar and nilgai.

Orissa also has three major wildlife habitats, out of which one is a National Park and two sanctuaries. While **Chilka is an all year round destination**, the **Similipal National Park** and **Satkosia gorge sanctuary** are best visited from November to May. Spreading over 900 sq. kms of lakes, shore and hinterland, Chilka is part of a large lagoon, separated from the **Bay of Bangal** by a strip of sand. It is India's largest salt lake and home to a large number of migratory and other birds like flamingoes, duck, bar-headed goose, sandpiper, plover, ruddy shelduck, gulls, terns, and white-bellied sea eagle. **The Similipal Park**, best time between November and June, is home to the tiger, elephant, gaur, leopard, mouse deer, flying squirrel, and the mugger crocodile. **The Satkosia Sanctuary** houses the gharial, tiger, sloth bear and the leopard.

Rajasthan boasts of the National Parks, as follows; **The Desert National Park** shelters the stately Great Indian Bustard. Apart from this are the Blackbuck, Chinkara, wolf, desert fox, hare, and desert cat, and is

open all the year round. **The Keoladeo Ghana National Park** welcomes tourists round the year for viewing its inhabitants which comprise as many as 350 species of birds including its winter visitors from Central Asia and Siberia. The rare Siberian crane traverses more than 6000 kms every year to reach here in winters. The best time to watch birds here is early morning or late evening. Some of the major species spotted here apart from the Siberian crane are, the cormorant, egret, heron, painted stork, spoonbills, ibis, pelican, barheaded goose, etc. The mammals found here include the wild boar, sambar, chital, blackbuck, fishing cat, mongoose, and also the python and monitor lizard among the reptiles.

11.7 SUMMARY

It was gradually realized that more important is to analyze the impacts on the tourism resources, nature and environment being the prominent ones. Any devastation of natural resources would ultimately lead to the devastation of all economic gains, leave aside tourism along. If one destination declined because of environmental exploitation, the tourists, in the short run will move to another one. But how many destinations can be destroyed like this and how many new destinations tourism will find? There is an ongoing debate on the tourism impacts on environment:

Wildlife management is a complex job. A comprehensive set of issues to be addressed in the formulation of any strategy or action plan. Any strategy has to be a multi-pronged one protecting both, the animal and its habitat and ensuring continuity of any species. It includes Survey and documentation, Conservation projects, Legislations and enactment, International conventions, Wildlife tourism, Education and awareness generation and NGO and people's involvement.

The Planning Commission of India has identified twelve Strategy Challenges for the 12th Plan Approach Paper. "Managing the Environment and Ecology" with the following five components is one of the Challenges as Land, mining and Forest Rights, Mitigation and Adaptation Strategy for Climate Change, Waste management and Pollution Abatement, Degradation of forests and loss of biodiversity and Issues of Environment Sustainability. Conservation and protection of wild animals has been there in the informal domain since time immemorial. One can cite the Ashthom inscriptions in this regard in ancient India besides numerous other literary texts. However, it was only with the coming of the British and later in the post colonial India that formal acts aimed at direct

or indirect management of wildlife were taken up. Apart from the policy matters and legislations, there are various other ways through which government seeks to promote wildlife conservation and protection. The steps regarding taken are as framed the National Co-ordination Committee, Eco-development in and around National Parks and Sanctuaries, Regulation of EXIM Policy, Wildlife Education and Training and Awareness generation and promoting public participation in wildlife conservation.

India has a strong network of institutions mapping various life forms and undertaking taxonomic studies. The three premier institutions in this regard are Botanical Survey of India, Zoological Survey of India and Forest Survey of India.

Many conservation projects have been launched with the aim of long-term survival of wildlife. Two main projects in this regard are In-Situ Conservation and Ex-situ conservation. In-situ conservation aims at the conservation of wild species in respective habitats and eco-systems which includes protected area network, National parks and sanctuaries and Resources. While Ex-Situ involves conservation of species outside their respective habitats and ecosystems. This includes zoological and botanical gardens.

The urge to conserve wildlife resources and prevent gene-erosion manifests itself in enactment of various legislations. The Wildlife Protection Act (1972) is the supreme legislation in relation to the protection of wildlife. Besides there are other legislations, though not so direct, as well to aid the cause of wildlife conservation. The various forest acts (Indian Forest Act 1927, Forest Conservation Act, 1980), Environment Protection Act, the acts related to biodiversity as also the legal status of national parks, sanctuaries and conservation projects are also of paramount importance in the preservation of wildlife. The Prevention of Cruelty to Animals Act 1968 and the Animal Welfare Board have their own role to play in wildlife management.

Historically and culturally, forests and all forms & wildlife in them, have played a very important role in the Indian way of life. Plants and animals have even been worshipped over the centuries and thus the importance accorded to them. According to estimates the forests, the deserts, the mountains and swamplands of India sustain over 350 species of mammals 2,100 kinds of birds - both local and migratory, 350 varieties of reptile and innumerable insects.

Each sanctuary has several species of mammals and birds but is sometimes known for one particular species. For instance the Sultanpur Sanctuary in Haryana is known for the large contingent of migratory birds from October onwards every year and Gir in Gujarat for its lions. About 80 National Parks and 441 Sanctuaries have been created to protect this life from the onslaught of urbanization and rapidly increasing population.

11.8 EXPECTED QUESTIONS

1. Explain the environmental impacts due to tourism?
2. Describe the various components of wildlife management?
3. Write an essay on evolution of wildlife policy in India?
4. Explain some strategies for National Parks and Wildlife Conservation in India?
5. Write on documentation work for National Parks and Wildlife Conservation in India?
6. Enumerate conservation projects on National Parks and Wildlife in India?
7. Write a note on national parks and wildlife tourism in India?

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UNIT 12: TOURISM IN COASTAL AND ISLAND ENVIRONMENTS

STRUCTURE:

12.1   Introduction

12.2   Objectives

12.3   Islands and beaches of India

12.4   Importance of coastal and island environments

12.5   Impact of tourism on coastal and island environment

12.6   A way to minimize the negative impacts on coastal and island environment

12.7   Summary

12.8   Expected Questions

12.9   References

12.1 INTRODUCTION

Tourism in islands and coastal areas' context involves people who come from other countries for the pleasure of visiting the island environment. Since tourists spend money on travel, hotels, food, entertainment and recreation, they can be an important source of income and thus of economic development for islands with few other possible sources of revenue.

The tourists who come to the islands have been attracted by their image of the island environment: sun and sea, white sandy beaches and waving palm trees, lush vegetation and friendly natives. The reality is never quite the same as the tourist image, but while it can be different, it should not disappoint them or tourism will ultimately fail.

People do not come several thousand kilometres to see the same dirt, pollution, industry and degraded environments that they have at home. Tourism thus depends on the quality of the environment for its success, and good tourist development requires the protection and even the improvement of the environment.

The most important tourism resources are the natural beauty of the island, their distinctive or exotic character, their recreation possibilities and

the cultural interest of the people. The hotels, resorts, transportation networks, recreation facilities and other tourism infrastructure can complement but never completely replace the dependence on environmental resources.

The basic problem with tourism development is that tourism facilities and the tourists themselves have impacts on the environment. If care is not taken, the tourism development itself can gradually destroy the environmental resources on which it depends. This problem can be particularly serious on tropical islands where the environment is fragile and easily degraded, and where the small scale of the island means that even moderate tourism development can have a proportionately large impact.

In this unit, we will discuss the keywords like beaches and coastal areas and their importance. Moreover, a discussion will focus on the impact of tourism on the coastal and island environments especially in their physical, socio-cultural and economic environments. After that, the discussion will move towards the probable solutions of minimizing these impacts.

12.2 OBJECTIVES

After reading this unit learner will be able to:
- To know about the islands and beaches of India
- To understand the importance of coastal and island environment
- To know about the impact of tourism on coastal and island environment
- To know the ways to minimize the negative impacts on coastal and island environment

12.3 ISLANDS AND BEACHES OF INDIA

Unlike islands and beaches in the west, in India, islands and beaches are very much regarded as a part of the mainland. Though India does not have many islands, the only notable ones being the Andaman and Nicobar and Lakshadweep group, it has some very attractive beaches. Let us have a look on the spatial distribution of these island and beaches of India.

Beaches

India has over 7500 kms long coastline indented with beaches. More developed beaches, particularly from tourism point of view (like Kovalam

in Kerala or the others in Goa) exist along the western coast because of a regular coastline and strong wave action.

The Western coast covers the states of Maharashtra, Gujarat, Goa, Karnataka and Kerala. Out of these, Maharashtra does not have very developed coasts. The Chowpatty and Juhu beaches of Bombay town open spaces and cater mainly to the resident population.

- **Goa** – It has the most comprehensive beach resort in the country. Goa's coastline provides endless sun drenched crescents of sand. Vagator, Anjuna, Aguada, Baga, Calanghute and Candolin stretch out in an unbroken palm fringed Pine. Other Beaches are at Miramar and Colva. Parasailing, yachting, windsurfing and deep sea diving are some of the popular water sports, facilities for which are available. In addition, every sort of accommodation fringes the beaches, from deluxe resorts to budget lodgings.

- **Diu** – A tiny island off the extreme south of the mainland, it is even now a secluded beach resort near a colonial town of great charm, with whitewashed churches and tile roofed villas.

- **Gujarat** – The state of Gujarat is endowed with lovely beaches. One of them is Ahmedpur Mandvi whose chief attraction is the ethnic beach resort. Cottages modelled on rural Gujarati architecture look out onto a secluded beach, one of the state's chief centres for water sports.

- **Kerala** – Just 16 km. away from Trivandrum is one of the most popular beaches in the country; Kovalam.

India's long eastern coast bordering the Bay of Bengal presents a charming scene of sun-drenched golden beaches stretching endlessly over hundred of miles in exotic wilderness. It covers the states of Orissa, Andhra Pradesh and Tamil Nadu.

- **Andhra Pradesh** – The coastal fringe of Andhra Pradesh in particular bound by sea and the lush green Eastern Ghats is a beach lover's parad ise. Against the backdrop of low hills, one would find curvaceous shore lines dotted by secluded creeks and cover where the idyllic waterfronts are caressed by dazzling white surf. The fast developing modern port-city of Vishakhapatnam, or Vizag as it is popularly called, offers tourists and travellers a unique opportunity to explore and enjoy rare views of Gopalpur in Orissa. Bheemunipatnam, just 24 kms away from Vishakhapatnam, is a tranquil beach resort with its aquamarine waters and green groves.

- **Orissa** – Puri, about 60 kms away from the capital of Bhubaneswar, is a beach that has been relatively overshadowed by the religious

importance of the place. Gopal-on-Sea is a quiet beach resort 95 kms away from Bhubaneswar.

- **Tamilnadu** – The Marina Beach is regarded as one of the longest beaches in the world.

The Island

The Andaman and Nicobar Islands and the Lakshadweep islands form the two groups of islands. Both enjoy the status of union territories administered directly by the federal government. Except for certain similarities like oceanic location and tropical maritime climate, the two island groups differ in a variety of ways. The Andaman and Nicobar Islands are the elevated portions of submerged submarine mountains, a continuation of the Anakon Yoma of Myanmar. The Lakshadweep on the other hand is coral built on the submerged Aravalli strike and nowhere rise above five meters in attitude.

In terms of population density though the Andamans and Nicobar islands have an area of 8249 sq. km. (km2) the population density is 34. On the contrary, Lakshadweep which has an area of only 32 sq. km. (km2) has a comparatively high density of population at 1612. In terms of economy while some agriculture in rice, sugarcane and spaces in carried out in the Andaman an d Nicobar Islands, the economy of Lakshadweep is completely dependent on coconut plantation and fishing.

Coconut covers around 85% of Lakshadweep's total area whereas land under crops is less than one per cent. In the Andaman and Nicobar Islands, on the other hand, 80% of the area is under forest. Thus forest based industry such as sawn timbers, commercial plywood and match splints continue to prosper. In Lakshadweep, coir processing and copra making for export are major household industries. Tourism has been picking up in both these islands.

Andaman and Nicobar group of islands are more connected in terms of transport with regular air and sea services between the mainland and the islands. While travelling is restricted in Andaman, the islands are open to tourism with lovely beaches and coral beds forming traveller's delight. They are more famous however for the Cellular Jail, Marine Park and Elephant Nursery while Lakshadweep group of islands are known more for their coral beaches. Tourism's major focus here also includes water sports. The long areas of crystal clear water surrounded by coral reef offer ideal grounds from everything from snorkelling to wind surfing.

12.4 IMPORTANCE OF COASTAL AND ISLAND ENVIRONMENTS

As far as the choice of islands and beaches as tourist destinations are concerned, we may study them under two sets of factors; general and specific. Among the general factors we may cite:

- **General relaxation** – Two of the most preferred destinations include mountains and beaches. Proximity also accounts as one of the factors.
- **Pilgrimage** – This may not be true for all beaches but is particularly true for Puri and the Lord Jagannath Rath Yatra.
- **Love for water and sand** – People fascinated with sand, sunshine and water.
- **Naturalists Botanists and Zoologists** – Students and scientists studying marine ecosystems, endemic species, tropical forests, corals etc. may opt to go to Andaman and Nicobar or Lakshadweep islands.
- **Watersports** – Like scuba diving, snorkelling, deep sea diving, rafting, water surfing attract many sports enth usiasts to islands and beaches. Other sports like golf etc. attract tourist attention.

There are certain factors however very specific to island destinations. While talking of islands specially, scholars tend to attach certain 'exclusiveness' to these destinations. Butler while talking of small islands highlights some universally appealing features like physical separateness, political independence, cultural differences and attractive climate and environment.

History, customs, hospitality and a sense of isolation feature regularly in tourist marketing and advertisements. Other 'fascination factors' include remoteness, access to abundant water and the influence that water has a geo-physical and the cultural environment, a sense of adventure, a particular way of life often at a slower pace than that of the mainland and a preserved culture and language. All these attributes create what is called an 'island experience'. However, unlike other small island states (SIS) which are politically independent / autonomous, in India, Andaman and Nicobar or Lakshadweep islands are mainly extensions of the mainland political set up.

12.5 IMPACT OF TOURISM ON COASTAL AND ISLAND ENVIRONMENT

Major impacts: Tourism can effects socio-economic milieu of islands and beaches in more than one ways. Before analyzing the possible impacts of tourism on Indian islands and beaches let us familiarize ourselves with the

broad directions or ramifications of such an impact. Such a study could be conveniently carried out less than three heads / categories, as follows:

- Physical environment
- Socio-cultural impact
- Economy of the region

Let us briefly touch upon all these areas.

- **Physical Environment:** As far as the physical environment is concerned, though it has generally been argued that existence of tourism provides positive avenues for environmental protection like designation of national parks, restoration of historic buildings, creation of pedestrian precincts, there are many studies which suggest as conflict between the two. Destruction of coastal habitats, conflicting claims over land between tourism and agriculture, endangerment of the marine and aquatic ecosystems, dumping of building wastes and haphazard urbanization are some cases in this regard.

- **Socio-Cultural Milieu:** The host – guest interaction augurs a plethora of problems. Undesirable socio-cultural spill-over include commercialization of arts and culture, rising level of crimes, erosion of local social values, drugs and gambling etc. 'Demonstration Effect' involving the adaptation of foreign lifestyle by the local inhabitants particularly the younger generation is a very common phenomenon. Disillusionment among local residents also results from substantial leakages of income overseas, high levels of expatriate ownership and management. Such alienation often breeds hostility or indifference.

      Doxey (1976) has developed an irritation index which traces the local community's reaction, beginning with a level of euphoria associated with early tourist arrivals through the antagonism when a place becomes saturated with tourists.

   Lockhart (1994) in his study of Mediterranean islands employed what is known as 'contact ratio'; a local population / tourist bed-capacity ratio. It is generally recognized that a ratio of less than eight local inhabitants to one tourist at any point of time is undesirable and likely to lead to social and psychological problems for the host community.

- **Economic Impacts:** The role of tourism in resource augmentation of a tourist destination is universally recognized creation of employment, skill training and the multiplier effects of foreign exchange earnings play an important role in the economics of the destination. Tourism has thus emerged as the largest service activity in many islands and beaches.

Such an attractive proposition however, is not without some negative accompaniments.

Domination by multinational or external companies, low levels of local involvement, expatriate asset ownership and management and high leakage rates of tourist expenditure go against the potential resource accumulation.

- **Discussion on some other impacts:** The incidence of impact can be greater in the case of island economies which are very vulnerable. Lack of diversification because of resource scarcity, income volatility because of extreme openness and export concentration and an inability to generate self sustained growth because of capital shortage and small market size.

According to the World Bank, remote islanders also suffer reduced real income and basic services because of high transport costs associated with dependence on essential imports and scale diseconomies. Unique natural and cultural patrimony constitutes the one enduring insular comparative advantage. However, insular environments are very fragile, characterized by high endemism but weak species diversity, making them vulnerable to external impacts from introduced predators, over harvesting, invasive crowding and natural disasters.

Likewise closely interlocking insular terrestrial and marine ecosystems are extremely permeable to all sorts of transport and construction activities. McMurray and Smith point out that the decline of renewable agro-forestry and fishing pursuits, traditional cultural roots have been weakened by the presence of affluent visitors and lifestyles and the lure of western media. Mass tropical tourism has also threatened islands' bio-cultural diversity.

According to a 1999 UNEP Report, the majority of global bird distinctions have occurred on islands. Although, over one of six plant species grew on islands, one of three of all known endangered plant species grow on oceanic islands. Even islands containing fresh water resources are threatened by hotel and condominium developments on steep slopes, harming watersheds, causing erosion and lagoon pollution. Reefs are at risk because of run-off and sedimentation and discharges of untreated municipal and hotel waste.

In Indian Ocean, heavily populated areas have been affected by over fishing, reef harvesting for trade in rare species, sand-mining for construction, as well as mangrove destruction, erosion, siltation and coastal pollution through unplanned urbanization. Let us look at some examples. In Comoros, deforestation is proceeding rapidly at the rate of

five per cent per annum. The natural vegetation of Mauritius has been virtually eradicated for sugarcane. Mauritius and Seychelles are ranked second and third in terms of endangered native plant species. In some islands over half of the endemic species are threatened.

The economic and social impacts of tourism are a big subject that cannot be covered thoroughly here. They should be examined in detail for any large tourism development project.

Economically, tourism can create jobs for local people and bring money into the country. However many tourists like their comforts from home, and it is often necessary to import a large part of their requirements, so that much of the money may leave the country again to pay for these imports. If the resorts and hotels have been financed by overseas investors, they will also want to export their profits.

The developers may want the government to improve the airport, roads and other infrastructure, and possibly to provide tax breaks and other financial advantages, which cost the country money. The remaining benefit to an island country from some kinds of tourism development may thus be small indeed. Other kinds of tourist facilities provided by villages or financed locally may be economically more interesting.

The social impacts of tourism may also be important. Most jobs for local people in the tourist industry are as servants, house maids, waiters, gardeners and other menial work that may give people a sense of inferiority. At the same time the tourists come from other societies with different values and lifestyles, and because they have come seeking pleasure, they may spend large amounts of money and behave in ways that even they would not accept at home.

Local people seeing the tourist example may want to live and behave the same way. Tourists may also, out of ignorance or carelessness, fail to respect local customs and moral values. These and other social effects may be among the most important long-term impacts of tourism development.

Tourism development usually starts with the construction of hotels, resorts and other places for tourists to stay. In addition there may be restaurants, night clubs, and recreation facilities such as golf courses, tennis courts, swimming pools, and marinas. These facilities require a lot of space, and land is usually scarce on an island.

Land and resources used for tourism are not available for other uses; developers may even want to keep local people away from beaches, reefs and lagoon areas reserved for tourists only. Whenever possible,

tourism developers prefer to build on the coast, where the hotel will front on a beach and perhaps a coral reef, yet the coast is the most fragile and vulnerable area on an island, with the greatest conflicts between uses.

The construction of these facilities can have the same kinds of impacts as any other construction projects, such as soil erosion, changes in water runoff, and damage to natural environments. If the resort is on the coast, the plans frequently call for changes in the coastline, such as the creation or improvement of a beach, the construction of an artificial island, or the dredging of a harbour or building of a dock for tour boats to use to pick up and leave off the tourists. These changes may upset normal coastal processes and be very difficult to maintain.

Coastal hotel sites themselves are often vulnerable to storm damage, erosion and other problems because of their exposed location.

Tourist developments also require resources that may be scarce on an island. Water may be in short supply, yet tourist use of water is usually much greater per person than among the local population. Tourists require large quantities of high quality food; if it cannot be produced locally, it will have to be imported.

The sewage from large hotels can be a source of pollution if it is not treated and disposed of carefully. Most hotel projects include waste water treatment plants, but these can be difficult to maintain in the islands and need to be monitored regularly. Tourist facilities also produce large amounts of solid waste which can add to the existing solid waste disposal problems on many islands.

Any major tourist development requires a good airport where large jets can bring tourists from overseas countries. Visits by tour ships may require improved docking facilities. Roads may have to be built to resort sites, or improved for tour buses. Water and electricity supplies may have to be increased. All these kinds of infrastructure require investments which must be added on to the direct cost of a tourism project.

Building roads, airports and docks can have major environmental impacts which are beyond the scope of this unit. Their overall effects, however, may be positive as well as negative. Such facilities benefit local people as well as tourists, reducing the isolation of remote areas and increasing the convenience of travel within the country and overseas. Tourism development can thus support useful expenditures that could not be justified for the local people alone.

Tourists are often unaware of how fragile some island environments are. They may trample vegetation and thus cause erosion,

or disturb birds and wildlife. They may leave their rubbish behind, littering the environment. They are apt to break corals as the walk or swim over the reef. Even anchoring in a fragile reef area can result in significant damage to corals.

Tourists love to collect corals, shells and other pretty objects as souvenirs, but too much collecting can damage a reef or other site. Fishing is sport for a tourist, but it may take away resources needed as food in nearby villages.

Where a few tourists may do little damage, thousands of them can be a disaster. Think of the difference between one tourist breaking off a piece of coral, and hundreds of tourists each taking a piece of coral; a reef could quickly be stripped of its corals and shells. Areas subject to heavy tourist pressure should be protected from damaging activities. Laws may be needed to protect wildlife and to control collecting.

The increasing demand for curios such as stuffed turtles, turtle shell jewelry, mounted butterflies, and traditional objects made with rare bird feathers or animal skins can threaten rare species with extinction.

The manufacture and sale of such objects should be prohibited or strictly controlled. Coral, shells for handicrafts or collectors, and local trees used for carving can also be wiped out locally or reduced to low levels when too much is used to supply the tourist trade.

Incidence and mechanism of impacts

Tourism impacts are difficult to measure. They are pervasive, involving a service of products / services consumed and they include difficult to quantify cultural and ecological externalities. There are no universally accepted comprehensive measures of overall tourism impact.

Tourism does not always have negative implications. The negative effects of tourism however result from some factors like quality and profile of the tourists, their expectations and desires, the number of tourists visiting a region, their period of stay, the destination's carrying capacity vis a vis infrastructural development etc.

Most efforts to define carrying capacity in the islands have focussed on qualitative definitions of saturation: infrastructure breakdown, subsistence disruption, congestion realty inflation, rising host hostility, declining cultural values and visitor satisfaction and the replacement of lost natural amenities with man-made attractions.

Quantitative measures of tourist penetration have focused either on economic impact (contribution to GDP and employment) or on social impact (visitors per host population) or on environmental pressure (hotel

rooms per unit of land area). Scholars are now coming up with new concepts of tourism impact: Socially Optimal Visitor Flew (SOVF) – Input - Output Ratio, Tourism Penetration Index (TPI). These categories and concepts developed particularly in the context of independent small island states may not be replicated exactly in the context of Indian islands and beaches but can provide valuable insights in the coastal area management. Let us now have a look at some of the mechanism of impact. These also account for the pressures generated by tourism.

- Pollution by waste water, garbage, heating, noise and traffic emersions
- Encroachment of buildings, facilities and roads close to show
- Beach erosion due to building, dune removal and dredging
- Excessive use of natural areas
- Destruction of natural areas to accommodate tourists and other needs
- Inter-sectoral competition and conflict over (marine and terrestrial space)
- Exclusion of local communities from decision-making
- The loss of natural and architectural heritage in the face of rapid expansion
- Strain on public utilities and facilities
- Displacement of local population
- Creation of restricted exclusive zones that are off-limits for the local people
- Loss of business by local enterprises as all inclusive resorts supplies all the guest requirements
- Recreational activities can also have a significant impact on the coastal zone
- gold course impact can be considerable, with those situated directly on coastal habitats (specially sand dunes)
- erosion of reefs and coral from divers and swimmers
- pollution from boats and jet skis
- Noise from motor boats and jet skis, cars and buses, nigh life and other activities.

12.6 A WAY TO MINIMIZE THE NEGATIVE IMPACTS ON COASTAL AND ISLAND ENVIRONMENT

Suggestions from the International Agencies: The islands and beach tourism needs proper planning and attention. The importance of such an issue is increasingly being recognized globally. The United Nations

Commission on Sustainable Development (1999) perhaps echoes a similar concern "the survival of small island developing states is firmly rooted in their human resource and cultural heritage, which are their most significant assets, those assets are under severe stress and all efforts must be taken to ensure the central position of people in the process of sustainable development". Some of the possible suggestions could include:

In the short run attempts can be made to regulate tourism by way of legislations (like that enacted by Goan government) on physical pollution of beaches. Beach patrols like those on Kovalam could act as possible disincentive to cultural pollution. Similarly tourist educational camps could especially vis-a-vis ecologically sensitive tractions could also help the cause.

The ultimate solution however lies in a long term planning. As such an Integrated Coastal Area Management (ICAM) is the need of the hour. Ingredients of such a management plan could be the following:

New tourism development plans should be planned taking into account municipal, industrial, agri / acqua-cultural and nature protection activities to allow for multiple complementary usages.

Such plans should act in tandem or work in collaboration with other area development or regional plans or components of national plans.

Local culture, traditions should be taken into account and attempts should be made to promote local ownership and management of programmes and projects.

Tourist traffic should be based on the carrying capacity of the region. Quality tourism based on social and ecological carrying capacities should be encouraged which are economically sustainable as well.

Local Agenda 21 plans should be implemented. This could be done by way of a task force or Sustainable Tourism Working Group. Attempts should also be made to establish transnational partnerships. Netherlands has initiated a new mechanism for such transnational partnerships called 'Local Agenda 21 Charters'.

Such a management plan which incorporates the concerns and interests all possible stakeholders; the local people, the NGO's, tourist agencies, small and medium enterprises, industry representatives. Lessons learnt in one community should be accessible to others. This would start the ICAM process.

Environmental Impact Assessments (EIA) and Environmental Audits could be possible legal mechanisms of such a plan.

Above all, awareness generation and tourist sensitization to the local socio-environmental milieu needs to be undertaken.

Other ways to minimize the negative impacts: Some other ways are as follows:

- Planning tourism development
- Comprehensive planning for tourism
- Conservation

- **Planning tourism development:** One major question to be answered in planning tourism development is what scale of tourism is appropriate for the local environment and culture. Every place has a carrying capacity that cannot be exceeded without bringing about serious changes or even the collapse of important resources or systems.

While some small-scale tourism can be fit in almost anywhere, large scale tourism can cause major problems if it is not planned very carefully. The number of tourists an area can absorb should be decided before tourism development goes too far, because there always will be pressures for bigger and bigger developments.

The appropriate scale of tourism may be determined by the most limited resource, such as water or coastal land, or by the desire to prevent serious social or cultural impacts. How many people, for instance, can a community receive comfortably as visitors, or how would it feel to be outnumbered by the tourists on your own island?

- **Comprehensive planning for tourism:** Unlike most development projects that only involve a specific site or area, tourism frequently depends to some extent on an entire country or island. It is therefore in the interest of the tourist industry to see that the overall planning of the country's development includes the requirements of tourism.

As more governments begin environmental planning and make physical plans (including town plans, master plans and coastal zone plans), it is essential that these plans include the sites of particular scenic or recreational potential. The coastlines, vistas, swimming beaches, waterfalls, mountains and lagoons that tourists visit and photograph are capital assets just like hotels, but they are generally not owned by the tourism interests that benefit from them. Only careful comprehensive planning, and often the understanding and support of the traditional owners, can protect these resources from degradation and destruction.

Planning helps in making choices between conflicting uses, or in finding ways to make them compatible. It should aim to locate unsightly or

polluting activities, like industrial areas, fuel storage depots, rubbish dumps, etc., where they will not destroy the beauty of a town or coastline or conflict with tourist sites.

In many island towns, there are already too many cases where urban pollution is making tourist beaches unsightly or unsafe. Planning early for tourism development can help to avoid damaging and expensive errors and also to prevent the gradual erosion of environmental values significant to tourism.

Improvements that help tourism, like better transportation, tree planting, restoration of historic sites, urban beautification and cleanliness, also improve the environment for the local population. Tourism development can help to stimulate general community improvement.

- **Conservation:** One area where tourism interest coincides with the long-term interest of a country is in the conservation of nature and traditional culture. Tourists are particularly attracted by unusual vegetation, birds and wildlife, by coral reefs and lagoons, and by distinctive cultures, customs and life styles.

Very little has been done to develop these resources for better tourism, and ways need to be found to make them available without putting them at risk or degrading them. The development of protected areas such as national parks and reserves can be one way to protect a country's heritage and to make it available for local education and tourism.

The investment in facilities such as trails, signs, picnic shelters and visitors' centres is usually repaid through tourists who come in larger numbers and stay longer because there are more things to see and do.

- Conservation areas will also attract special categories of tourists with interests in botany, bird watching, wildlife, nature photography, skin diving, archaeology, etc. Such kinds of tourists are generally more interested in the country they visit and less apt to cause serious social impacts.

Overall, tourism tends to be a mixed blessing in its benefits and impacts on the island environment. If it is allowed to grow unplanned, it can have serious social and environmental impacts while providing little real economic benefit. If developed with care, it can bring many advantages to small island communities with few other resources.

12.7 SUMMARY

Though India does not have many islands, the only notable ones being the Andaman and Nicobar and Lakshadweep group, it has some very attractive beaches. Let us have a look on the spatial distribution of

these island and beaches of India. India has over 7500 kms long coastline indented with beaches. More developed beaches, particularly from tourism point of view (like Kovalam in Kerala or the others in Goa) exist along the western coast because of a regular coastline and strong wave action. The Western coast covers the states of Maharashtra, Gujarat, Goa, Karnataka and Kerala. Out of these, Maharashtra does not have very developed coasts. The Chowpatty and Juhu beaches of Bombay town open spaces and cater mainly to the resident population.

The Andaman and Nicobar Islands and the Lakshadweep islands form the two groups of islands. Both enjoy the status of union territories administered directly by the federal government. Except for certain similarities like oceanic location and tropical maritime climate, the two island groups differ in a variety of ways. The Andaman and Nicobar Islands are the elevated portions of submerged submarine mountains, a continuation of the Anakon Yoma of Myanmar. The Lakshadweep on the other hand is coral built on the submerged Aravalli strike and nowhere rise above five meters in attitude.

As far as the choice of islands and beaches as tourist destinations are concerned, we may study them under two sets of factors; general and specific. Among the general factors we may cite general relaxation, pilgrimage, love for water and sand, naturalists botanists and zoologists and watersports.

Tourism can effects socio-economic milieu of islands and beaches in more than one ways. Before analyzing the possible impacts of tourism on Indian islands and beaches let us familiarize ourselves with the broad directions or ramifications of such an impact. Such a study could be conveniently carried out under three heads as Physical environment, Socio-cultural impact and Economy of the region.

The incidence of impact can be greater in the case of island economies which are very vulnerable. Lack of diversification because of resource scarcity, income volatility because of extreme openness and export concentration and an inability to generate self sustained growth because of capital shortage and small market size.

Tourists love to collect corals, shells and other pretty objects as souvenirs, but too much collecting can damage a reef or other site. Fishing is sport for a tourist, but it may take away resources needed as food in nearby villages.

Where a few tourists may do little damage, thousands of them can be a disaster. Think of the difference between one tourist breaking off a

piece of coral, and hundreds of tourists each taking a piece of coral; a reef could quickly be stripped of its corals and shells. Areas subject to heavy tourist pressure should be protected from damaging activities. Laws may be needed to protect wildlife and to control collecting. The increasing demand for curios such as stuffed turtles, turtle shell jewelry, mounted butterflies, and traditional objects made with rare bird feathers or animal skins can threaten rare species with extinction. The manufacture and sale of such objects should be prohibited or strictly controlled. Coral, shells for handicrafts or collectors, and local trees used for carving can also be wiped out locally or reduced to low levels when too much is used to supply the tourist trade.

Tourism does not always have negative implications. The negative effects of tourism however result from some factors like quality and profile of the tourists, their expectations and desires, the number of tourists visiting a region, their period of stay, the destination's carrying capacity vis-à-vis infrastructural development etc.

Most efforts to define carrying capacity in the islands have focussed on qualitative definitions of saturation: infrastructure breakdown, subsistence disruption, congestion realty inflation, rising host hostility, declining cultural values and visitor satisfaction and the replacement of lost natural amenities with man-made attractions.

The islands and beach tourism needs proper planning and attention. The importance of such an issue is increasingly being recognized globally.

Some other ways are Planning tourism development, Comprehensive planning for tourism and Conservation.

12.8 EXPECTED QUESTIONS

Q1: Describe islands and beaches of India?

Q2: Explain the significance of coastal and islands environments?

Q3: What are the major impacts of tourism on coastal and islands environments?

Q4: Explain the incidence and mechanism of impacts?

Q5: Suggests some ways to minimize the negative impacts on coastal and island environments?

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UNIT 13: ENVIRONMENT IMPACT ANALYSIS – NEED AND SCOPE

STRUCTURE:

13.1   Introduction

13.2   Objectives

13.3   Environment Impact Analysis (EIA)

13.4   Various evaluation methods of EIA

13.5   Tourism Impact Assessment (TIA)

13.6   Need and scope of EIA

13.7   Summary

13.8   Expected Questions

13.9   Keywords

13.10 References

13.1 INTRODUCTION

In this unit, first of all we will learn about the concept of Environment Impact Analysis (EIA) then the various evaluation methods of EIA will be discussed. The concept of Tourist Impact Assessment (TIA) will also be discussed after wards. The unit is concluded with the study and understanding of need and scope of EIA.

13.2 OBJECTIVES

Aftaer reading this unit learner will be able to:

- To understand the meaning and concept of Environment Impact Analysis (EIA)
- To know and understand the various evaluation methods of EIA.
- To understand the term "Tourism Impact Assessment (TIA)."
- To know the need and scope of EIA.

13.3 ENVIRONMENT IMPACT ANALYSIS (EIA)

Environmental Impact Assessment (EIA) is one of the proven management tools for incorporating environmental concerns in development process and also in improved decision making. The growing awareness, over the years, on environmental protection and sustainable

development has further given emphasis on sound environmental management practices through preparation of Environmental Management Plans (EMPs) for minimizing the impacts from developmental activities.

Basically, an environmental impact assessment is an assessment of the possible positive or negative impact that a proposed project may have on the environment, together consisting of the environmental, social and economic aspects. The purpose of the assessment is to ensure that decision makers consider the ensuing environmental impacts when deciding whether to proceed with a project.

Moreover, the International Association for Impact Assessment (IAIA) defines an environmental impact assessment as "the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals prior to major decisions being taken and commitments made." EIAs are unique in that they do not require adherence to a predetermined environmental outcome but rather they require decision makers to account for environmental values in their decisions and to justify those decisions in light of detailed environmental studies and public comments on the potential environmental impacts of the proposal.

All developmental activities use natural resources as raw material and the wastes generated are disposed into different environmental media. The signs of stress on the scarce natural resources are evident from the deteriorating air quality, soil degradation, polluted rivers and streams and in the general status of environment in various regions. It is now well recognized that, for sustainable development and optimal use of natural resources, environmental considerations are required to be integrated in planning, designing and implementation of development projects. The envisaged benefits from development projects cannot be fully realized unless they are environmentally and socially sound and sustainable.

Historical background and present scenario of EIA: EIAs began to be used in the 1960s as part of a rational decision making process. It involved a technical evaluation that would lead to objective decision making. EIA was made legislation in the US in the National Environmental Policy Act (NEPA) 1969. It has since evolved as it has been used increasingly in many countries around the world. EIA as it is practiced today is being used as a decision aiding tool rather than decision making

tool. There is growing dissent on the use of EIA as its influence on development decisions is limited and there is a view it is falling short of its full potential. There is a need for stronger foundation of EIA practice through training for practitioners, guidance on EIA practice and continuing research.

EIAs have often been criticized for having too narrow spatial and temporal scope. At present no procedure has been specified for determining a system boundary for the assessment. The system boundary refers to 'the spatial and temporal boundary of the proposal's effects'. This boundary is determined by the applicant and the lead assessor but in practice, almost all EIAs address the direct, on-site effects alone. However, as well as direct effects, developments cause a multitude of indirect effects through consumption of goods and services, production of building materials and machinery, additional land use for activities of various manufacturing and industrial services, mining of resources etc. The indirect effects of developments are often an order of magnitude higher than the direct effects assessed by EIA. Large proposals such as airports or ship yards cause wide ranging national as well as international environmental effects, which should be taken into consideration during the decision-making process.

Broadening the scope of EIA can also benefit threatened species conservation. Instead of concentrating on the direct effects of a proposed project on its local environment some EIAs used a landscape approach which focused on much broader relationships between the entire population of a species in question. As a result, an alternative that would cause least amount of negative effects to the population of that species as a whole, rather than the local subpopulation, can be identified and recommended by EIA.

There are various methods available to carry out EIAs some are industry specific and some general methods:

• **Industrial products** - Product environmental life cycle analysis (LCA) is used for identifying and measuring the impact on the environment of industrial products. These EIAs consider technological activities used for various stages of the product: extraction of raw material for the product and for ancillary materials and equipment, through the production and use of the product, right up to the disposal of the product, the ancillary equipment and material.

- **Genetically modified plants** - There are specific methods available to perform EIAs of genetically modified plants. Some of the methods are GMP-RAM, INOVA etc.

- **Fuzzy Arithmetic** - EIA methods need specific parameters and variables to be measured to estimate values of impact indicators. However many of the environment impact properties cannot be measured on a scale e.g. landscape quality, lifestyle quality, social acceptance etc. and moreover these indicators are very subjective. Thus to assess the impacts we may need to take the help of information from similar EIAs, expert criteria, sensitivity of affected population etc. To treat this information, which is generally inaccurate, systematically, fuzzy arithmetic and approximate reasoning methods can be utilized. This is called as a fuzzy logic approach. At the end of the project, an EIA should be followed by an audit. An EIA audit evaluates the performance of an EIA by comparing actual impacts to those that were predicted. The main objective of these audits is to make future EIAs more valid and effective. The two main considerations are:

➢ **Scientific** - to check the accuracy of predictions and explain errors.

➢ **Management-** to assess the success of mitigation in reducing impacts.

Some people believe that audits be performed as a rigorous scientific testing of the null hypotheses. While some believe in a simpler approach where you compare what actually occurred against the predictions in the EIA document. After an EIA, the precautionary and polluter pays principles may be applied to prevent, limit, or require strict liability or insurance coverage to a project, based on its likely harms. Environmental impact assessments are sometimes controversial.

EIA in Indian scenario: The Ministry of Environment and Forests (MoEF) of India has been in a great effort in Environmental Impact Assessment in India. The responsible body for this is the Central Pollution Control Board. The main laws in action are:

- The Water Act (1974)
- The Indian Wildlife (Protection) Act (1972)
- The Air (Prevention and Control of Pollution) Act (1981)
- The Environment (Protection) Act (1986)

Environmental Impact Assessment (EIA) studies need a significant amount of primary and secondary environmental data. The primary data are those which need to be collected in the field to define the status of the

environment (like air quality data, water quality data etc.). The secondary data are those data which have been collected over the years and can be used to understand the existing environmental scenario of the study area.

The environmental impact assessment (EIA) studies are conducted over a short period of time and therefore the understanding of the environmental trends, based on a few months of primary data, has limitations. Ideally, the primary data has to be considered along with the secondary data for complete understanding of the existing environmental status of the area.

In many EIA studies, the secondary data needs could be as high as 80% of the total data requirement. EIC is the repository of one stop secondary data source for environmental impact assessment in India.

The Environmental Impact Assessment (EIA) experience in India indicates that the lack of timely availability of reliable and authentic environmental data has been a major bottle neck in achieving the full benefits of EIA. The environment being a multi-disciplinary subject, a multitude of agencies is involved in collection of environmental data. However, there is no single organization in India which tracks the data available amongst these agencies and makes it available in one place, in a form and manner required by practitioners in the field of environmental impact assessment in India.

Further, the environmental data is not available in value added forms that can enhance the quality of the EIA. This in turn adversely affects the time and efforts required for conducting the environmental impact assessments (EIAs) by project proponents and also timely environmental clearances by the regulators. With this background, Environmental Information Centre (EIC) has been set up to serve as a professionally managed clearing house of environmental information that can be used by MoEF, project proponents, consultants, NGOs and other stakeholders involved in the process of environmental impact assessment in India. EIC caters to the need of creating and disseminating of organized environmental data for various developmental initiatives all over the country.

EIC stores data in GIS (Geographic Information System) format and makes it available to all environmental impact assessment studies and to EIA stakeholders in a cost effective and timely manner.

13.4 VARIOUS EVALUATION METHODS OF EIA

Changes in the practice of Environmental Impact Assessment (EIA) and advances in information technology have greatly expanded the range of tools available to the EIA practitioner. For example, map overlay methods have evolved into sophisticated Geographic Information Systems (GIS). Expert systems, a branch of artificial intelligence, have been developed to help in screening, scoping, developing terms of reference (TOR) and conducting preliminary assessments. These systems use comprehensive checklists, matrices and networks in combination with hundreds of impact rules developed by EIA experts. The global embrace of sustainable development has made the analysis of costs and benefits an integral part of EIA. This has forced the expansion of factors to be considered in traditional cost benefit analysis.

The following are the specialized approaches and methods that have evolved to meet the changing needs of EIA:

- Predictive methods
- Environmental risk assessment
- Economic analysis
- Expert systems

Some other popular used methods are as follows:

Ad hoc methods are useful when time constraints and lack of information require that the EIA must rely exclusively on expert opinion.

Checklists and matrices are good tools for organizing and presenting information.

Sectoral guidelines are becoming widely accepted as an appropriate technique for conducting initial environmental analysis. It includes an overview of the Sectoral guidelines developed by the Asian Development Bank (ADB), the World Bank, and the Economic and Social Commission for Asia and the Pacific (ESCAP).

The systematic sequential approach (SSA) provides a proven approach to "thinking through" the causal chain: activity - changes - impacts - mitigation.

Networks are a formalized way of representing these causal chains.

Simulation modeling workshops are techniques for taking network representation of impacts and building simple conceptual models. In developing the simulation models, the conceptual models are translated into mathematical and computer language. Through the use of dynamic simulation, the impacts over time can be projected.

Spatial analysis methods allow for the presentation of the spatial pattern of environmental impacts through map overlays. GIS is routinely used for analyzing and displaying spatial impacts.

Rapid assessment techniques have been designed to cope with need for quick assessments to deal with rapid changes in many parts of the developing world.

Checklists and matrices are good tools for organizing and presenting the large amount of information that must be processed in EIAs. Matrices also help to represent the interactions between project activities and environmental components.

The sectoral guidelines help bring collective experience with environmental impacts of specific project types to bear during initial assessments. They normally contain a comprehensive listing of:

- Project types covered by the guidelines
- Activities that fall within each project type
- Environmental components that may possibly be affected by the project activities
- Significant issues that must be addressed in project planning
- Suggested mitigation measures that might be incorporated into the project
- Recommended monitoring requirements

The SSA shows how to systematically conduct the EIA using this information. It relies on development of conceptual models of causal chains: activity- environmental change- impact - mitigation.

Network diagrams are one of the best ways of representing these causal chains. These networks help in visualizing and understanding the basic relationships between environmental components that may trigger higher order impacts.

Computer simulation modeling workshops can be used to develop conceptual models and network diagrams. In some cases, computer models may be developed during these workshops.

Pollution and pollution control is one of the major problems in developing countries. The rapid assessment procedures provide a method for developing pollution inventories and recommending pollution control strategies.

Most methods are best used during the impact identification stage of EIA. To be effective they must be used with other tools or rely expert judgment.

13.5 TOURISM IMPACT ASSESSMENT (TIA)

Tourism is increasingly being seen as a developmental tool which can address issues of poverty, employment and community and regional development through what is known as multiplier effects. Over the past 25 years, through its work on understanding which really benefits from tourism, the Indian organizations viz. EQUATIONS has repeatedly highlighted the negative impacts of tourism as well as the potentials for positive impacts.

We believe that if conducted in a manner which is democratic, just, equitable and sustainable tourism can be an empowering experience. However, policy makers and the tourism industry approach tourism only from the perspective of contribution to the GDP and to company profits respectively.

For any activity to have a positive impact, it is but obvious that there would be negative impacts which would need to be mitigated. Similar is the case with tourism, which is most definitely not as benign as it is made out to be.

Tourism is multi-sectoral in nature and includes issues of infrastructure (transportation, electricity, water, land), labour, use of natural spaces as tourism products. Apart from the tourism industry which includes hotel/resort owners, tour operators and tourists, important stakeholders are communities who live in the vicinity of tourism destinations. Tourism has social, economic, cultural, environmental and political implications for these communities, which are not adequately considered while framing tourism policies and guidelines.

Impact Assessment: Impact assessment is a process of reviewing and evaluating the impact of any activity (such as construction of tourist facilities: hotels, lodges, public beaches, highway, etc. on the coastal environment or on the natural resources, culture, economy, etc.). Without knowing and being aware of negative environmental effects it would be impossible to plan and take any effective, reasonable measures aimed at protecting the quality of the coastal environment and human life.

The only legal tool currently applied in practice for assessing the negative environmental impacts of concrete projects is environmental impact assessment (EIA). The procedure that extends the concept and principle underlying EIA is called strategic environmental assessment (SEA). There are some other tools and instruments used to assess impacts on the coastal environment and humans for example, risk

assessment, etc. There are many advantages of this useful procedure some of them are listed below:

- It provides the evidence of the structure or a product that is formed by the manufacturing group or organization.
- It identifies the under and over represented functions and factors of the policies and structures.
- It acts as the supporting pillar in the development of policies and structures.
- Applicable, acceptable and equally useful in all the field of life.
- Helps in improving the performance of the procedure or product.
- Enlightens the environmental, health social and economics' consequences of the application under process.
- Provides assured structure and reduces the risk of practical performance.
- Enlightens the logical and conceptual objectives.
- Provides testimonials for the fundamentals of policies.
- Improves and assess the quality of the policy, product or a procedure.
- Considered a the integrated approach which analyze both the disadvantages and advantages
- Provides confidence to the new initiatives in the society.
- Also help the organization in evaluating the cost and maintenance of the policies or structures.

Structure of the impact assessment: The impact assessment is the procedure that supports the structural development of the policies. It pin point or assess the problem and the objectives that are formulated for that policies. Its implementation and usage are multi dimensional.

Basically, it quantifies the entire description of the specific problem, process or a product. And make all the possible impacts of the proposed structure invisible. This technique is platform independent and practiced in almost every aspect of the life.

In technical language we can define impact assessment as the measure of risks in the implementation of application to the user in the sense of safety.

Impact assessment provides the evidence to the organization about the structures, processes or a product that they develop. It evaluates the future position and advantages of the policies or a product they are dealing with .it also enlighten the negativity of the item. It's very useful.

Basically impact assessment is the process that is formed with the help of various steps which collectively assess the potential, economic, social and environmental factors that may occur. It's an essential process of in the success of any structure or a product.

Planning and Process of the impact assessment: There are many ways to prepare tourism need and capacity assessments and interpret the available data – whether it be the volume and value of visitors or accommodation occupancy statistics, for example. Nevertheless, there are a number of key elements that any appropriate study should incorporate to ensure that the evidence gathered by, or presented to, the local planning authority is suitably robust. These are discussed below:

Does the proposed development provide a good fit with local and regional tourism and economic development strategies?

For example, highlights the importance of driving up the quality of the product (i.e. focusing on the value of tourism rather than just the volume).

This should favour proposals to introduce new quality accommodation or attractions, or indeed the upgrading of an existing business/property. What is the age and socio-economic profile of catchment residents, and does this provide a good fit with relevant target markets? Consider the existing level of visitor numbers and interest in the area in question.

This demographic and visitor context will help to demonstrate whether there is likely to be sufficient market demand for the development proposals.

Properly and effectively done, it will provide an overview of demand which can be set against existing and future supply to identify a surplus or deficit of product provision.

Has research identified any market gaps and do the proposals meet this identified need?

It is unlikely that any right-thinking commercial developer would seek to develop a product in a particular location if they do not believe there is a market for the product.

Nevertheless, this has often been shown to be a necessary step in achieving planning permission for tourism development – whether a major visitor attraction of international significance or a small campsite offering just a few pitches on a seasonal basis.

The above steps, whilst somewhat simplified, will help to form the robust evidence base that the local authority will require in plan-making, or

in the determination of planning applications for new tourism developments.

With regard to the latter, the exact content of such evidence can be agreed in advance with planning officers.

In this context, it is important to note that the sequential test and impact test are only required for main town centre uses that are not in the town centre, and not in accordance with the relevant development plan.

These tests are not, for example, required for a holiday village in the countryside or for a hotel in the town centre.

Planning processes involve a wide range of stakeholders, are medium to long term, are subject to economic, social and environmental appraisal, assess and reconcile capacity and demand, are based on evidence and must be monitored and reviewed.

From whichever angle the personal or professional standpoint may be failure to provide a detailed evidence base to support the policy and site allocations or planning applications is likely to severely hinder new tourism-led development and regeneration proposals.

The streamlining of planning guidance set out in the new planning for Sustainable Economic Growth should assist operators and local authorities plan more effectively for tourism growth.

A more evidence-based approach, together with a renewed focus on sequential tests and impact assessments, should offer developers and operators opportunities to demonstrate the potential of their proposals to local planning authorities.

Only time will tell if this approach will herald a more streamlined and positive approach to the determination of new applications for tourism development.

However, does appear to place some responsibility in the hands of local authorities to give equal weight, alongside long-held sustainability, social and environmental indicators, to local economic development through tourism and leisure.

The basic tasks of planning for tourism impact assessment are:

- To set goals and objectives
- To analyse the past and the present
- To prepare for the future
- To select the best course of action

The complexity of tourism activity decision-making in general and the interconnectedness of tourism with other areas of policy and planning have rendered obsolete the traditional mechanistic, finite

plan style. Such a style was usually very ambitious, inflexible and target-driven. A companion style rests on the adoption of performance standards, whereby, after determining the likely amenities/facilities and services needed for a projected future level of visitors, the performance standards are applied to reveal the necessary level of accommodation and other services.

A collaborative, integrated process style, combining elements of the corporate management process used in business and the systems process often adopted by government agencies, may be used. Such a process usually consists of seven phases:

1. Study preparation
2. Determination of objectives
3. Surveys
4. Analysis and synthesis
5. Formulation of policies and plans
6. Preparation of the final, preferred plan
7. Determination of means of implementation and means of monitoring

A brief description is given here of these seven principal steps.

1. Study preparation

- realisation of the need for planning and for the systematic preparation of a tourism plan
- preliminary interpretation of:
- current tourism circumstances
- pending tourism development
- latent tourism opportunities
- potential problems for and because of tourism
- decision to undertake systematic assessment
- preparation of terms of reference
- specification of the problem to be addressed
- specification of preferred end-product (e.g. set of guidelines, comprehensive tourism plan, or specialist plan)

2. Determination of objectives

(The objectives expressed early in the study process will be provisional, and may be modified as experience and information is gained)
It derived from:

- general government objectives
- consultation process (mainly involving government and tourism industry)
- usually referencing such matters as:

- principal targets to be achieved
- principal safeguards (especially culture, community and environment) to be imposed-principal opportunities to be seized
- The objectives set in two categories:
- those which are essential (quantities of visitors, protection of environment, or limits to carrying capacity)
- those which are discretionary

3. Surveys

- each study will determine its own spectrum of surveys
- surveys will cover such matters as:
- existing tourist profiles
- assessment of tourism features
- assessment of complementary features
- assessment of investment sources and capability (including entrepreneurship and local leadership)
- assessment of government structures and organisations, and their involvement in activities which interact with tourism

4. Analysis and synthesis

- market assessment of demand, supply and feasibility of matching demand and supply
- integrated analysis of environmental, social and economic factors, to reveal
- tourism opportunities
- problems to be addressed
- needs for tourism
- interpretation of potential environmental, social and economic impact, and the determination of management strategies to overcome any potentially detrimental impact
- assessment of the impact of prevailing government policies and organizations and industry bodies on the achievement of the set objectives -including assessment of the suitability of existing tourism organizations, legislation and regulations

5. Formulation of policies and plans

- Preparation of a series of integrating policies concerned with
- economic strategy
- marketing
- human resources development
- environmental conservation

- investment
- organisation
- cross-referencing with preliminary objectives - perhaps necessitating review and revision in the light of further experience
- preparation of integrated development options (not a single plan, but a number of alternatives which may be tested against the reformulated objectives)

6. Preparation of the final, preferred plan

- this may be either of the previously considered options, or a new hybrid with a mix of the best compatible features from these options
- finalisation of the plan in respect of:
- tourism development regions/zones
- transportation links
- infrastructure systems
- tourism attractions
- labour skills
- investment levels and sources
- environmental and cultural conservation
- organisation (including legislation)

7. Determination of means of implementation and means of monitoring

- creation of an agency or agencies with the responsibility to ensure the finalised plan is implemented and monitored
- preparation of a schedule of tasks to be completed within prescribed time frames and period for review and revision
- creation of an agency or agencies for on-going supervision to ensure the plan remains relevant and feasible

13.6 NEED AND SCOPE OF EIA

The need and scope of EIA is explained through the studies of the followings:

1. Cost Benefit Analysis (CBA) and CBA of social cost
2. Materials balance model
3. Geographic information system environmental auditing
4. Eco-labelling and certification

1. Cost Benefit Analysis (CBA) and CBA of social cost: The term "Cost-benefit analysis" (CBA) means a process for evaluating the merits of a particular project or course of action in a systematic and rigorous way.

Perhaps the most contentious analysis in an Environment Analysis (EIA) is the cost benefit analysis. In an EIA, the cost-benefit analysis is part of the justification for the project. Cost-benefit analysis is a tool which decision-makers use to choose between alternative courses of action and in deciding whether a proposed project should go ahead or not. Cost-benefit analysis is undertaken to weigh the costs of proceeding with a project against the benefits that would arise from it. In order to weigh costs against benefits, cost-benefit analysis usually attempts to put a monetary value on both costs and benefits so that they are expressed in the same units. The costs of a road project would include the cost of labour and materials used in construction, as well as other costs such as the loss of parkland and homes, pollution, disruption to neighborhoods or the loss of peace and quiet. The benefits of such a project might include time saved to motorists, increased predictability of journey times and increased accessibility to a particular location.

Obviously, some costs and benefits are not easy to put into monetary terms. These include environmental values such as the value of clean air and water, un-spoilt wilderness areas, ecological balance and diversity. Different people will put different valuations on these.

Valuations can include economic, ecological, aesthetic and ethical components. The economic consultant who undertakes such a valuation must use judgment in deciding not only which methods to use to assess values but also whether to quantify them. If he decides to quantify environmental values, different methods will yield higher or lower figures and it will be tempting (especially if s/he wants future work) to use the method that suits the client's desired outcome.

Advocates of increased quantification in cost-benefit analysis argue that by placing explicit values on proposed actions, the process is more open to scrutiny by others. However, what tends to happen is that the analysis is highly technical and neither available nor accessible to the public. The value judgments are hidden beneath a mass of figures that give the impression that the analysis is rational, neutral and objective.

For example, in transport and particularly road projects, savings of time for motorists or commuters are often the major benefit of the project and these are quantified. This creates two areas of contention. One is predicting what the time savings would be; the other is estimating what those times savings are worth to the community. The assessment of how much a person's time is worth, another value decision, can determine whether benefits will exceed costs in the CBA.

Normally, future costs and benefits are discounted (reduced) because it is assumed that they are not worth as much to people today because people would rather have money and benefits now than later. In order to put everything into today's values a discount rate is applied to future values. The choice of a discount rate makes a big difference to the outcome of a CBA.

It can be very much influenced by value judgments including the judgment about entitlements of future generations. In terms of environmental costs, the higher the discount rate that is used, the greater is the bias towards the present and against the future. The further the costs are into the future, the less they will be worth in today's values; yet future generations will still have to put up with them.

The CBA of Social cost can understand by understanding the term "Social cost-benefit analysis". It refers to cases where the project has a broad impact across society and, as such, is usually carried out by the government. While the cost and benefits may relate to goods and services that have a simple and transparent measure in a convenient unit (e.g. their price in money), this is frequently not so, especially in the social case. It should therefore be emphasized that the costs and benefits considered by (social) `cost-benefit' analysis are not limited to easily quantifiable changes in material goods but should be construed in their widest sense, measuring changes in individual `utility' and total `social welfare' (though economists frequently ex-press those measures in money-metric terms).

In its essence cost-benefit analysis is extremely, indeed trivially, simple: evaluate costs C and benefits B for the project under consideration and proceed with it if, and only if, benefits match or exceed the costs.

$$B \geq = C?$$ Where, B = Benefits and C = Cost

So what makes things more complex? There are a variety of factors:

- Benefits and costs may accrue to different sets of people. If this is so we need some way to aggregate and compare different benefits and costs across people.

- Benefits and costs may occur at different points in time. In this case we need to compare the value of outcomes at different points in time.

- Benefits and costs may relate to different types of goods and it may be difficult to compare their relative values. This usually occurs when one of the goods does not have an obvious and agreed upon price.

For example, we may be spending standard capital goods today in order to obtain environmental benefits tomorrow.

- Benefits and costs may be uncertain.

- Benefits and costs may be difficult to calculate and as a result, there may be widely differing views about their sizes. One might think this could be subsumed under uncertainty, however the two points are rather different: two people agreeing that an outcome follows some probability distribution are different from them arguing about its mean and variance.

Usually, in real-world cases the dominant issue is usually the last one: the basic job of calculating estimates for the project's costs and benefits. This especially true in the `social' case where the projects under consideration may involve costs and benefits that very difficult to quantify - what is the benefit of the national security derived from military spending, how large are the benefits from education, etc. Necessarily this quantification only makes sense on a case-by-case basis.

2.   Materials balance model: The "Materials Balance Model" is an environmental economics model which explains a relationship between the environment (the starting point) and how we take its raw materials into a productions process.
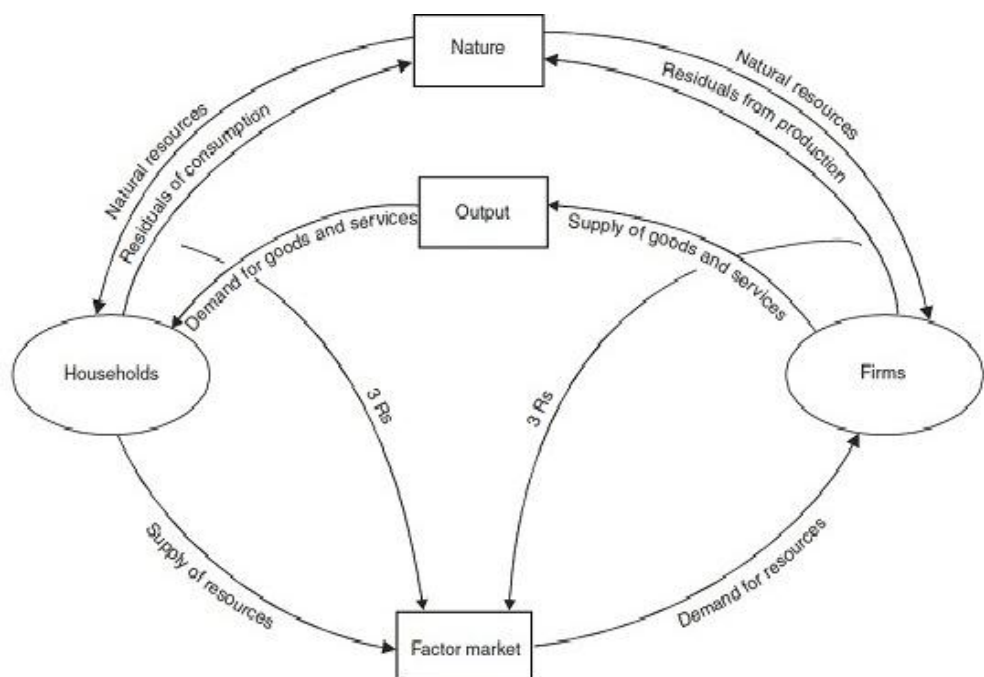

Fig. 13(a): The Material Balance Model

In the aftermath of production, the bi-products can become residuals that are discharged, or residuals that are recycled to be used in the cycle again. The goods from production are subsequently used by

consumers who produce residuals as well, that are both discharged or recycled (re-entering the consumer tract of the model).

In this analysis, the resources are identified as renewable natural resources and non-renewable natural resources. This renewable and non-renewable classification of resources are not a clear cut division of resources as some of the renewable resources sometimes take a very long period of time to renew themselves, which is felt as they are almost non-renewable. For example the tree varieties, which take very long periods to mature, like Palu and Weera is not renewable within a life time of a planning period or a human being. Some parts of the non-renewable resources can be reutilized with the development of new technologies like use of melted down old cars to make new cars.

This applies also to residuals as some residuals are life-long and others are short-lived. Some of the residuals have an assimilative capacity and effects not only the current living environment but environment of many centuries ahead.

However, all the residuals except for nuclear waste are capable of recycling and directed towards reuse or regeneration. Recycling is not fully capable of preventing the formation of residuals and finally all products add some form of residual to nature.

The time scale of the material balance model is not unlimited and based on the concept of ever changing knowledge and technological capacity. This model believes that man is capable of finding some answers of many problems which will enable him to survive longer than many people think.

3. Geographic information system environmental auditing: A geographic information system is a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data. The acronym GIS is sometimes used for geographical information science or geospatial information studies to refer to the academic discipline or career of working with geographic information systems. In the simplest terms, GIS is the merging of cartography, statistical analysis, and database technology.

Moreover, a geographic information system (GIS) integrates hardware, software and data for capturing, managing, analyzing and displaying all forms of geographically referenced information.

GIS allows us to view, understand, question, interpret and visualize data in many ways that reveal relationships, patterns and trends in the form of maps, globes, reports, and charts. A GIS helps you answer

questions and solve problems by looking at your data in a way that is quickly understood and easily shared. GIS technology can be integrated into any enterprise information system framework.

Basically, a GIS can be thought of as a system—it digitally creates and "manipulates" spatial areas that may be jurisdictional, purpose or application-oriented. Generally, a GIS is custom-designed for an organization. Hence, a GIS developed for an application, jurisdiction, enterprise or purpose may not be necessarily interoperable or compatible with a GIS that has been developed for some other application, jurisdiction, enterprise, or purpose. What goes beyond a GIS is a spatial data infrastructure, a concept that has no such restrictive boundaries.

In a general sense, the term describes any information system that integrates, stores, edits, analyzes, shares and displays geographic information for informing decision making. The term GIS-Centric, however, has been specifically defined as the use of the Esri ArcGIS geo-database as the asset/feature data repository central to computerized maintenance management system (CMMS) as a part of enterprise asset management and analytical software systems.

GIS - centric certification criteria has been specifically defined by the National Association of GIS-Centric Solutions. GIS applications are tools that allow users to create interactive queries (user-created searches), analyze spatial information, edit data in maps and present the results of all these operations. Geographic information science is the science underlying geographic concepts, applications, and systems.

GIS benefits organizations of all sizes and in almost every industry. There is a growing awareness of the economic and strategic value of GIS. The benefits of GIS generally fall into five basic categories:

- Cost Savings and Increased Efficiency
- Better Decision Making
- Improved Communication
- Better Recordkeeping
- Managing Geographically

- **Cost Savings and Increased Efficiency:** GIS is widely used to optimize maintenance schedules and daily fleet movements. Typical implementations can result in a savings of 10 to 30 percent in operational expenses through reduction in fuel use and staff time, improved customer service, and more efficient scheduling.

- **Better Decision Making:** GIS is the go-to technology for making better decisions about location. Common examples include real estate site

selection, route/corridor selection, evacuation planning, conservation, natural resource extraction, etc. Making correct decisions about location is critical to the success of an organization.

- **Improved Communication:** GIS-based maps and visualizations greatly assist in understanding situations and in storytelling. They are a type of language that improves communication between different teams, departments, disciplines, professional fields, organizations, and the public.

- **Better Recordkeeping:** Many organizations have a primary responsibility of maintaining authoritative records about the status and change of geography. GIS provides a strong framework for managing these types of records with full transaction support and reporting tools.

- **Managing Geographically:** GIS is becoming essential to understanding what is happening—and what will happen—in geographic space. Once we understand, we can prescribe action. This new approach to management—managing geographically—is transforming the way that organizations operate.

4. Eco-labelling and certification: Ecolabels and green stickers are labelling systems for food and consumer products. Ecolabels are often voluntary, but green stickers are mandated by law in North America for major appliances and automobiles. Basically, ecolabel is a sign or logo that conveys that indicates an environmentally preferable product, service or company that is based on standards and criteria.

They are a form of sustainability measurement directed at consumers, intended to make it easy to take environmental concerns into account when shopping.

Some labels quantify pollution or energy consumption by way of index scores or units of measurement; others simply assert compliance with a set of practices or minimum requirements for sustainability or reduction of harm to the environment.

Usually both the precautionary principle and the substitution principle are used when defining the rules for what products can be ecolabelled.

Ecolabelling systems exist for both food and consumer products. Both systems were started by NGOs but nowadays the European Union have legislation for the rules of ecolabelling and also have their own ecolabels, one for food and one for consumer products.

At least for food, the ecolabel is nearly identical with the common NGO definition of the rules for ecolabelling. Trust in the label is an issue

for consumers, as manufacturers or manufacturing associations could set up "rubber stamp" labels to green-wash their products.

Many people believe that most food ecolabels are the same as organic labelling. This is not inaccurate, a great many certification standards with ecolabels exist, such as Rainforest Alliance, Utz coffee, cocoa and tea, GreenPalm, Marine Stewardship Council, and many more; these are aimed at sustainable food production and good social and environmental performance. These are mainstream standards aimed at improving whole sectors of the food industry in addition there are many more of these which are business-to-business standards that do not carry consumer-facing ecolabels.

The last few years have seen a few key trends in the ecolabels space. One is the explosion in the numbers of different ecolabeling programs across the world and across business sectors, with many schemes broadening their issues to cover social, ethical and safety issues as well as just environmental. This has led to some confusion and perhaps fatigue amongst consumers and brand awareness of most labels (such as the EU Ecolabels) remains low.

A second key trend is the rise in uptake of voluntary ecolabels and sustainability standards by the business-to-business sector. In this space, global firms are demanding that the standards be (a) global in nature and (b) well documented, transparent and trustworthy. This has led to the growth of a few "super standards" which have become major global brands and are likely to edge out some of the smaller standards and labels in place.

Key examples are the Fairtrade label, the Forest Stewardship Council for the forestry sector and the Marine Stewardship Council for fish products. All have become well known consumer brands as well as key supplier filters for global buyers. This has led to the emergence of "standards for standards" whereby the organizations setting voluntary ecolabels adhere to guidelines laid down by wider stakeholder bodies such as the ISEAL Alliance.

The concept of 'environmental consumption' helps in developing an interest in eco-labels. This is a shift away from traditional command and control measures imposed by governments towards market governance which is a self-regulatory new environmental policy instrument, eco-labelling. Taken into consideration of this eco-labels potentiality to attain sustainability, various eco-labelling schemes have been introduced since early 90's.

Since United Nations 'Earth Summit' Conference in 1992, an international consensus has been generated to integrate environmental issues into manufacturing procedures and also in consumption patterns to achieve sustainable development. Therefore, it can be assumed that eco-labels can play a vital role here as these labels are directly linked between products and consumers.

This voluntary approach is so far aimed to encourage large industries to minimize their environmental impact by using the market forces to influence the informed consumers. That is why; industries are showing interest to get this certification as part of their industrial and commercial strategies.

In comparison to developing world, consumers of the developed world are more concern about the quality, safety and environmental sustainability of foods that boosts up the demand for 'green' foods. Now, this concern has moved towards the environmental effects of agriculture and globalization of food production leading to 'alternative' and 'sustainable food production'.

Thus, globally a third food regime is becoming more apparent which allows a rise of 'Alternative Food Networks' which gives a new dimension to consumers demand and corporate competition. Australian Consumer Association (CHOICE) confronted their concern about the consumers growing interest from green consumption to food production, like, use of pesticides, organic production, and genetic modification etc. In terms of ecological labelling, both certification and private standardization run parallel.

Eco-labelling standardization is a new form of regulation of the market economy which is voluntary in nature but impose upon large companies using market forces in order to harmonise production of goods and services with environment. Lately, it turns into a new form of non-state authority in both national and international levels.

Thus, it has been analysed through the prism of law and of political economy. The new idea of 'entrepreneurial democracy' based on the success of the ISO 14000 standards on the management of environmental quality and the ISO 9000 standards on quality production control. Once an industry decides to get this certification, it has to provide evidences of documented proof of compliance required. In terms of ISO 14042 standard, all applicants are obligatorily respect environmental legislation with related legislation. And breaching of any laws will result taken away of its license.

13.7 SUMMARY

The unit was started with the explanation of the concept of environmental impact assessment (EIA). EIA is the mix-up of positive and negative impact on our surroundings to with we contact to. Basically, an environmental impact assessment is an assessment of the possible positive or negative impact that a proposed project may have on the environment, together consisting of the environmental, social and economic aspects.

Changes in the practice of Environmental Impact Assessment (EIA) and advances in information technology have greatly expanded the range of tools available to the EIA practitioner. For example, map overlay methods have evolved into sophisticated Geographic Information Systems (GIS).

Expert systems, a branch of artificial intelligence, have been developed to help in screening, scoping, developing terms of reference (TOR) and conducting preliminary assessments. There are the specialized approaches and methods that have evolved to meet the changing needs of EIA are Predictive methods, Environmental risk assessment, Economic analysis and Expert systems.

Tourism Impact assessment is a process of reviewing and evaluating the impact of any activity (such as construction of tourist facilities: hotels, lodges, public beaches, highway, etc. on the coastal environment or on the natural resources, culture, economy, etc.). Without knowing and being aware of negative environmental effects it would be impossible to plan and take any effective, reasonable measures aimed at protecting the quality of the coastal environment and human life. The need and scope of EIA is explained through the studies of Cost Benefit Analysis (CBA) and CBA of social cost, Materials balance model, Geographic information system environmental auditing and Eco-labelling and certification.

13.8 EXPECTED QUESTIONS

1. Explain the concept of Environment Impact Assessment (EIA)?
2. Describe the various evaluation methods of EIA?
3. Write an essay on Tourism Impact Assessment?
4. What do you understand the term impact assessment and explain its structure?
5. Explain planning and process of impact assessment?
6. What are various needs and scope of EIA?

13.9 KEYWORDS

- **Environmental Impact Assessment**: A tool used to identify the environmental, social, and economic impacts of a project prior to decision making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment, and present the predictions and options to decision makers.

- **Environment:** The complex of physical, chemical, and biotic factors (such as climate, soil, and living things) that act upon individual organisms and communities, including humans, and ultimately determine their form and survival. It is also the aggregate of social and cultural conditions that influence the life of an individual or community. The environment includes natural resources and ecosystem services that comprise essential life supporting functions for humans, including clean water, food, materials for shelter, and livelihood generation.

- **Impact:** Any effect caused by a proposed activity on the environment, including effects on human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments, or other physical structures, or the interaction among those factors. It also includes effects on cultural heritage or socioeconomic conditions resulting from alterations to those factors.

- **Cost-Benefit Analysis:** Variety of economic tools that assign value to project components and perceived benefits, and are used to determine relative cost and benefit of development or project.

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UNIT 14: TOURISM CARRYING CAPACITY

STRUCTURE:

14.1   Introduction

14.2   Objectives

14.3   A concept of Carrying Capacity

14.4   Tourism Carrying Capacity (TCC)

14.5   Potential determinants of TCC

14.6   Measuring attempts of TCC

14.7   Summary

14.8   Expected Questions

14.9   References

14.1 INTRODUCTION

In this unit, first of all we will learn about the meaning and concept of carrying capacity. After that we will understand the meaning of tourism carrying capacity. We will also learn the potential determinants and measuring attempts of tourism carrying capacity. Moreover, in this Unit, an attempt has been made to familiarize you with the emergence of carrying capacity as an issue of concern in tourism. After briefly describing the concept, the Unit also discusses its potential determinants and the various issues related to it. The Unit also takes into account the application of the carrying capacity concept on the various areas in the field of tourism.

14.2 OBJECTIVES

After reading this unit learner will be able to:

- To understand the concept of carrying capacity
- To know about the interpretation and usage of carrying capacity in the context of tourism
- To understand the keyword "tourism carrying capacity"
- To examine the potential determinants of the tourism carrying capacity
- To know the problems associated with the measuring of tourism carrying capacity

- To learn more about some of the issues related to carrying capacity

14.3 A CONCEPT OF CARRYING CAPACITY

Carrying capacity as a concept has been there in the field of civil engineering for a long time. In its simplest term, it means determining the maximum capacity which a building, an infrastructure or a facility could sustain as regards the number of its users. The concept was applied by urban planners, architects, builders or engineers for constructing structures and was mainly applied in terms of physical carrying capacity.

However, the concept is no more confined to its above mentioned usages alone. Many other disciplines started applying this concept as per their specific requirements and areas. Today, besides the physical carrying capacity we talk of ecological carrying capacity, socio-cultural carrying capacity and economic carrying capacity and all these are extremely relevant in the field of tourism.

N. Saleem in his paper on "The destination capacity index: a measure to determine the tourism carrying capacity" (in A. V. Seaton et al edited Tourism: The State of Art, Sussex 1994) has mentioned that discussions on the carrying capacity concept probably date back to the 1960s in the 52 field of recreation management. He has cited certain works demonstrating the use of carrying capacity approaches for recreation management strategies. However, according to him, the emphasis was on indicating the physical carrying capacity instead of taking into account "other derivatives such as the social carrying capacity or ecological carrying capacity". It was used to determine the maximum number of users which could be "accommodated at a given time by certain facility or a specific site".

14.4 TOURISM CARRYING CAPACITY (TCC)

In the 1980s the term carrying capacity emerged out of the discussions on the negative impacts of tourism. The activities and processes that constitute tourism were homogenized and reduced to the volume of tourism. Mathematical models were developed, sociological models were developed and geographers attempted to measure the carrying capacity.

- Was it visible?
- Was it related to population density?
- Was it related to infrastructure?
- Was it related to the size of the local economy?
- Was it dependent on the resource base, tradition and culture?

- Was it related to an eco-system?

The debate has never conclusively been able to demonstrate the best method of establishing and measuring carrying capacity although modern tourism was certainly growing beyond its "carrying capacity" in many destinations. However, in the process of the debate, a number of interesting issues have emerged.

Tourism data, which is increasingly used to demonstrate its importance, is often incompatible, inconsistent and not necessarily credible, even when it is put out by the WTO. Therefore do we see tourism as a means to an end?

For example, Governments want to use tourism for economic benefits and are concerned about volumes of arrival and expenditure. Communities want conservation, access to their leisure and recreational spaces and free use of their tourism resources. For them sharing their resources with tourists becomes a carrying capacity issue.

Secondly, hospitality as a tradition and hospitality as an industry also view carrying capacity as an issue. To make accommodation, food and drink into commodities becomes an issue of what goes beyond the capacity of a destination.

Tourism planning and development requires trade-offs. This is a matter of allocating resources between users whose competing demands can create shortages. Land prices, goods and services can become expensive. All this leads to the emergence of a carrying capacity issue.
Tourism development often involves conflicting objectives. How do we build sustainable tourism and at the same time register growth, employment, and income and distribute it to the vulnerable sections of the resident population? How do we impose the costs of externalities on enterprises as they partake of the benefits? Well another carrying capacity issue has emerged if we have to find answer to these questions.

Goals for effective tourism development for less developed countries are always concerned with the key issues of community participation and carrying capacity. What exactly does the term mean and has it been replaced by sustainability?

According to the Lanzarote Charter of 1995, any destination must ensure that its tourism growth meets its socio-economic objectives and environmental needs and constraints. This must be done in consonance with the prevailing value system and cultural integrity and satisfy the perceptions of the local population regarding their needs and how they are to be satisfied.

The UNEP has adopted a definition of sustainable development in the following way: "Sustainable development is improving the quality of human life while living within the carrying capacity of supporting ecosystems." (WTO, 1995).

Tourism which had been considered a soft option in the past decades, is no longer so. It has become a very complex sector requiring a greater degree of expertise and professionalism. At least three disciplines converge to give us an understanding of sustainable tourism.

Economics, which attempts to maximize welfare within the existing capital-labour-technology stock; Ecology, which takes into account the ecological subsystem on which the economic system acts and Sociology, that identifies human beings as the key actors, who reflect their social structures when adapting their resource, base to their current and future needs. Thus, tourism should not infringe these three disciplinary requirements in its development.

Carrying capacity has therefore emerged as a central principle. Broadly, it determines the maximum use of any destination or site without eroding its environment (visible), resources (economic, scientific, social), community (structures and their interdependence), economy (both distributive and profit oriented), and culture (individual, social, group, pe rformative, artistic), and the value system, which has emerged from all these qualities that are interlinked.

The principle of carrying capacity therefore implies a limitation while at the same time becoming a criterion of sustainability. Carrying capacity, at all levels, defines how much tourism is permissible for positive gains and the point at which what was a gainful activity turns into a negative one. This is not so easy to establish as the theory suggests. The more composite the concept becomes the turning point becomes increasingly difficult to pin down. Carrying capacity according to the WTO includes several elements:

- **Physical:** related to space and its role in the touristic experience. The point at which a site can be viewed as overcrowded or congested and therefore requiring some management and control.
- **Ecological:** again based on the volume beyond which unacceptable ecological changes will occur either from the establishment of infrastructure, services and facilities and tourists.
- **Cultural:** representing the point at which man made, social and historical resources begin to deteriorate or transform due to visitor pressure.

- **Tourist satisfaction index:** the point at which the tourist begins to find a visit unacceptable due to all of the above reasons and becomes dissatisfied.
- **Residents' social tolerance:** the point at which the residents begin to become hostile to the demonstration effect of tourism.

The pro-tourism advocates do not see carrying capacity as being an absolute criterion. Through planning and management it can become elastic and accommodate higher levels of visitation and activity. Zoning, rostering, reclamation, seasonality and tourist behaviour can all play a role in expanding capacity. Tourism Policy should determine how carrying capacity is to function as a guideline. Today successful tourism development has to be concerned with a proper understanding of carrying capacity and the policy support to develop methodologies to estimate the perfect balance between tourism and all the elements that go into its practice.

Carrying capacity operates in a dynamic system of change. In nature the timing is precise, through a seasonal cycle conditioned by the food and survival chains that link species together. Human behaviour often does not conform to the pace of nature. Thorough research and investigation are required before any changes are effected in the carrying capacity of a destination. To be economically and socially sustainable, tourism has to be environmentally and culturally sensitive.

This requires longer time frames and space frames than have been considered by tourism planners. Zoning, clustering, integration, interdependence, pricing and closure that are the traditional methods to provide accessibility, elasticity, diversity and a cost-benefit analysis to determine carrying capacity have obviously not performed the function of sustainability.

Peter Dogse in an Electronic Conference on Research and Biodiversity raised some interesting points as regards the usefulness of tourism carrying capacity:

"Calls are often made to restrict tourism in places where it degrades, or threatens to degrade biodiversity in line with the site's environmental 'carrying capacity' (e.g. the number of visitors and level of use a site can sustain without experiencing irreversible biodiversity impacts)."

Assuming (a) that it is feasible to identify scientifically sound carrying capacity figures, and (b) that tourism flows actually are kept within the established carrying capacity limit, the question could still be asked:

how useful is the carrying capacity concept as described above in tourism management? This question is challenging for a number of reasons:

It is the most limiting factor that determines the 'true' carrying capacity, which may not necessarily be biodiversity concerns. A destination may receive fewer tourists than the environment can support but more than its local population accepts. Allowing tourism flows up to the environmental carrying capacity while exceeding cultural or social limits would likely not be good tourism management.

Human values and perceptions change over time. Additional tourists might be welcome if more of their expenditures benefited local people. Due to natural fluctuations in ecosystem functions etc. biodiversity constraints can also suddenly become more limiting. Managing tourism flows based on outdated or static carrying capacity figures is therefore not efficient.

Investments can be made in order to increase a site's carrying capacity (i.e. in waste water recycling, establishment of green corridors for wildlife, tourist awareness campaigns etc.) Technological innovations or more efficient use of resources may also ease environmental limitations. The carrying capacity is subsequently a function of available financial, technological, human and natural capital.

The environmental carrying capacity concept alone is therefore of limited interest in terms of identifying the 'optimal' level of tourism where net tourism benefits are maximized (investing large sums in order to increase the carrying capacity marginally will for example often not make economic sense).

The relevance of the concept will of course be further reduced if it proves impossible to meet the assumptions (a) and (b) made earlier.

14.5 POTENTIAL DETERMINANTS OF TCC

In fact, there can be various potential determinants of tourism carrying capacity. N. Saleem lists them as follows:

- Socio-economic environment: economic multipliers,
- Socio-cultural environment: relative visitor density, and
- Ecological and socio-psychological environmental: related land use intensity.

In relation to tourism, the determinants of carrying capacity are also including areas like psychological carrying capacity, social carrying capacity, economic carrying capacity, environmental carrying capacity, etc.

The entire issue is a complex one as each determinant affects the other and has a multiplier effect not only in terms of impacts but also in terms of the destination lifecycle and destination capacity.

For example, Jansen-Verbeke while discussing the tourism carrying capacity of a historical city mentions that the economic carrying capacity of a historic city relates to rise in property values, changes in land use, invasion of tourism -oriented shops, etc. All this cannot be compartmentalized only in relation to the economic impact or economic carrying capacity as it changes social relations, social behaviour and affects the society as a whole.

The economic carrying capacity according to Saleem, "can be said to refer to the threshold point which provides the highest level of benefit or earning retention to the system".

Hence, the determinants of the economic carrying capacity can be related to economic activities like investment of foreign capital, labour conditions, imports, foreign exchange rates and earnings, inflation, rise in property values, profits and wages, leakages in the economy, etc. Each of these can have a positive or negative bearing on the destination depending on the type and nature of tourism development that is taking place.

Economic dis-benefits will lead to adverse socio -economic conditions which according to Saleem can be characterized as follows:

- low-paid jobs and economic hardship for some, leading to social polarization,
- competing migrant labour associated with resident hostility and aggression,
- social tensions between the have and have-nots,
- antagonism towards the outside entrepreneurs and vendors by the locals,
- perceived economic dis-benefits by the locals,
- high leakage of earnings from the system due to repatriation of profit/wage and imports of luxury goods,
- Inefficiency and effectiveness of the system in general.

Tourist numbers in terms of arrivals are closely related with the economic carrying capacity. There are many destinations in the world where tourist arrivals outnumber the resident population during the tourist season. All locals do not thrive on tourism income and the stress which this influx of tourists creates on the infrastructure very often creates hardship for the locals.

Overcrowding of the destination and overuse of the infrastructure ultimately affects the destination lifecycle as the tourists also shy away from a degraded destination. The tourist-host interaction affects the socio-cultural environment in terms of lifestyles, beliefs, values, language, customs, traditions and even ideologies. There are no set parameters to measure these impacts but the erosion of values, imitation of tourist behaviour, etc. puts a strain on the socio-cultural capacity of the destination. Similarly, carrying capacity in relation to the ecological factors is determined keeping in view or analyzing the effects of tourism activity on the eco system of the destination as a whole.

For example, how much visitors a national park can have at a time? How much of the area of the national park is to be opened to the visitors? How many vehicles can be allowed inside the park? are questions that can be answered after taking into consideration various determinants in a national park. At times, even identifying these determinants is not an easy task because a lot depends on the visitors' behaviour and sensitivity.

14.6 MEASURING ATTEMPTS OF TCC

Important parameters have to be considered by the multi-stakeholder process in which governments and industry which have always had a voice in decision making have to hear the voice of the communities and the sub-groups within communities to create sustainable safeguards. Physical and built environments have an important role in creating comfort zones for the resident population and cannot be transformed in ways that are detrimental to this need of the community.

How do we get an assurance that all tourism participants will adopt an ethical, sound and conservative approach to nature, culture, economy and community?

In recent discussions on Fair Trade in Tourism, which has emerged as an industry-government community interface on ethical tourism behaviour, neither tourists nor the big players have been able to give such an undertaking. They have by-passed the issue of fair trade by introducing certification, a process designed and managed by them. Similarly, governments have not distributed tourism and developmental projects with equity. The private sector and foreign investment have flowed to developed areas, regardless of the carrying capacity. In backward regions, tourism, like the plantation economy before it, has come in on very unfair trade terms. The determinants have been an ensured return on investment rather than the cost to be borne for carrying capacity. Local

communities continue to bear these costs. For local people to assume leadership for tourism projects is an ideal situation. Government, business and financial institutions do not create their capacity to undertake such a task. Universities and NGOs have attempted to increase their awareness of both good and bad practice in tourism. The bad is down played and the good is promoted to ensure that economic goals are achieved at any cost. In a country like India, where tourism does not figure either at state or federal government level, but all decision making and policy formulation is centralized, carrying capacity is very much a casualty. Guidelines for carrying capacity promote a scientific assessment, monitoring and mediation to respond to changes in products, markets and destinations. However, which science is being promoted?

To-day capacity building and need based development have been replaced by marketing and management. The principles of these new disciplines are not based on host community perceptions. They are developed through the case study method and then universalised. In the case of carrying capacity however, the specific is more crucial than the universal.

Social and Psychological aspirations are often difficult to judge. When we talk of trade-offs, in carrying capacity there are also these judgments that defy rationality and logic. In the case of tourism these judgments can be very misleading. Beyond a point of development, that which was tolerable becomes intolerable.

Let us look at the example of cremation grounds becoming a tourist attraction. The argument of the western tourist gaze is that any event that takes place in the public domain can be turned into a product. Since our cremation of the dead is in the public domain rather than a funeral parlour or church, it is open to tourism.

1. How can we determine what is the carrying capacity of a cremation ground?
2. How many tourists can be taken to the crematorium?
3. Why are they interested in the ghats and not crematoriums?
4. Is there a carrying capacity to be determined to maintain a touristic image or stereotype of an "other" culture?
5. Can one therefore say that there is no carrying capacity for participation in a funeral?

While there is a growing clamour in many countries to leave tourism policy implementation to the private sector, since the current conventional wisdom is blindly supportive of market mechanisms, the above illustration

shows how difficult it is for commerce to grow in harmony with humanism rather than the other way around. According to Butler, "the nature of tourism to some degree determines the nature and pattern of growth and, unless checked and controlled, will inevitably create a set of problems." The free play of the market, as in the case of Mussorie, Shimla, Manali and Goa has led to exceeding capacity limits. Pilgrim tourism in many cases has led to overreaching the capacity, through encouragement of policy makers.

Recently the Central Government of India has decided to hand over 34 national tourist sites to the private sector, because the state does not have the funds to provide civic amenities, which are an important part of the carrying capacity of a site. The Taj, The Sun Temple, Bridhiswara temple and Golconda fort as well as churches and convents in Goa have been identified. The entry fee will remain with the Government, which has asked for seed money of Rs.100 crores from the Finance Ministry to set up a tourism development fund. The development of the site would be donor specific and the Tourism Fund and the Private sponsor would jointly manage the site. If this proposal succeeds, then a Pilgrim Development Board would also be set up to oversee provision of facilities for pilgrims at the religious sites around the country.

Let us look at the Kumbh Mela as an illustration of the issue of capacity and the cost of the overreaching numbers that participate in the Kumbh experience. Preparations for the promotion of the Kumbh began a year in advance in a public-private partnership. 30Lakh pilgrims took dips in the Prayag of three rivers on the first day. This year's Maha Kumbh witnessed many changes in Indian social life that were not visible in 1989.

There were cyber cafes, mobile phones, and satellite dishes; Ariel cameras and cable T.V. crews from around the world, Akharas with decorated arches; naga sadhus braving the cold waters; special trains with additional carrying capacity; thousands of small boats to ferry tourists, commandos patrolling the area to ward of terrorism and aggressive marketing by corporates promoting new products and web sites. 15 million participated in the Kumbh in 1989.

This time the figure was four times as many. A tour operator had set up 74 tents with five star comforts for high profile tourists. Such was the estimate of high spending demand. Planning for the mega month long carnival began with the setting up of a Master Plan by August 2000. The implementation of the plans depended on the course of the river at the time of the Mela.

The area was carved into 11 sectors, following the basic administrative principle to cater for such a large gathering. Sector magistrates, with the help of five Mela officers were put in charge. 24 agencies, including the Public Works, Water, Municipality and Development authority, health, transport, power, food, tourism and culture, came together. The first step was to map the area, then contact the previous administrators of the mela whose experience could be tapped. The process of land acquisition was next and then budgeting for the expenditure of 120 crores which led to the provision of support staff and communications. Despite the money and planning, pilgrims and sadhus alike were demanding additional facilities.

At no point was there any interaction with the local community. It was an administration driven plan. The social elite had several camps to choose from at varying rates, to cater to the curiosity of the anglophiles about an event that became the media focus for a whole week. The backpackers had also grown older and were now used to a certain standard of living.

The well-heeled and choosey travelers had Akharas, hotels and campsites to choose from. The aftermath of this massive human celebration will have to be assessed, but it is clear that the planning effort was focused on creating the basic infrastructure, and not the impact of so many people. The carrying capacity for the Kumbh is not determined. It enlarges with the demand. Whilst these measures are indicative of the concern for upgrading tourist sites in line with the increasing sophistication and mobility of 175 million domestic tourists, it does not reflect the concern for carrying capacity.

When the Vaishno Devi shrine was upgraded it led to a stampede of tourists who could access the site much more comfortably than before. Today a permit system has been imposed to control the numbers. In contrast the Tirupati temple has introduced tickets ranging from cheap to very high prices to create a demand-supply match. Facilitation can therefore be instrumental in overreaching the capacity of the destination and controls have to be set up. Tourists do not like these controls.

Various methodologies have been proposed debated upon and in some cases pilot tests carried out in relation to measure the carrying capacities whether they are physical, social, economic or psychological. For example, econometric models based on input variables like visitor numbers and tolerance levels of the resource system and host population were used in some cases.

In case of environmental carrying capacity, scientific measures have been adopted. However, there have been extensive debates as regards the feasibility as well as the outcome of such methodologies. The industry looks upon this concept from the market point of view and many researchers in this area confine tourism carrying capacity to the market-driven approach meaning thereby the threshold "when the visitor number approaches a point beyond which the destination fails to provide quality visitor experience" (S C Plog : Leisure Travel: Making it a growth market, New York, 1991).

Similarly, in his book on Sustainable Tourism, Victor T C Middleton has mentioned that "Sophisticated concepts such as tourism-carrying capacity, impeccable in theory, are immensely complex in practice and they cannot be applied in planning practice until the various measures of capacity can be routinely monitored and measured against different types of visitor demand. At the time of writing, although countries such as Australia, New Zealand and Switzerland are moving in this direction, there is no known major tourism destination country which has adequate measurement for tourism and its impacts at local level, or proven techniques for the simple collection and communication of such data for local visitor management purposes".

In the free market model, carrying capacity is consumer-led rather than resource or community-led and it is here that problems may emerge. For example, let us take a situation where monuments are closed on Mondays. Tourists may be in the town or city or site only for that day when all monuments are shut.

On the other hand, in season, the souvenir sellers and catering establishments will also not have any business on the closed day. In attempting to balance use and overus e of sites, scientific analysis will also have to take into account such problems and not only numbers. Some Mass Tourism has reached predatory dimensions; the time has now come for all participants to pay serious attention to carrying capacity as the conceptual principle that will determine the future of tourism.

We are likely to see a much more careful application of the limitations of carrying capacity when giving permission for the development of tourism projects. However, local participation is critical if the concept is to become useful as a tool for sustainable tourism.

The Codes of Conduct and Charters for Sustainable development indicate that there is no place on earth where tourism is not taking place; that there is no ideal site; no perfect tourist; no ethical

businessman/woman; no government that looks to tourism as a tool for equity. Given that various trends and agendas exist, carrying capacity requires local agency to inform and create tourism that fulfils the aspirations of different stakeholders.

14.7 SUMMARY

Carrying capacity as a concept has been there in the field of civil engineering for a long time. In its most-simplest term, it means determining the maximum capacity which a building, an infrastructure or a facility could sustain as regards the number of its users. The concept was applied by urban planners, architects, builders or engineers for constructing structures and was mainly applied in terms of physical carrying capacity.

Carrying capacity has therefore emerged as a central principle. Broadly, it determines the maximum use of any destination or site without eroding its environment (visible), resources (economic, scientific, social), community (structures and their interdependence), economy (both distributive and profit oriented), and culture (individual, social, group, performative, artistic), and the value system, which has emerged from all these qualities that are interlinked.

The principle of carrying capacity therefore implies a limitation while at the same time becoming a criterion of sustainability. Carrying capacity, at all levels, defines how much tourism is permissible for positive gains and the point at which what was a gainful activity turns into a negative one. This is not so easy to establish as the theory suggests. The more composite the concept becomes the turning point becomes increasingly difficult to pin down. Carrying capacity according to the WTO includes several elements like Physical, Ecological, Cultural, Tourist satisfaction index and the Residents' social tolerance.

Carrying capacity operates in a dynamic system of change. In nature the timing is precise, through a seasonal cycle conditioned by the food and survival chains that link species together. Human behaviour often does not conform to the pace of nature. Thorough research and investigation are required before any changes are effected in the carrying capacity of a destination. To be economically and socially sustainable, tourism has to be environmentally and culturally sensitive. In relation to tourism, the determinants of carrying capacity are also including areas like psychological carrying capacity, social carrying capacity, economic carrying capacity, environmental carrying capacity, etc.

The entire issue is a complex one as each determinant affects the other and has a multiplier effect not only in terms of impacts but also in terms of the destination lifecycle and destination capacity.

Overcrowding of the destination and overuse of the infrastructure ultimately affects the destination lifecycle as the tourists also shy away from a degraded destination. The tourist-host interaction affects the socio-cultural environment in terms of lifestyles, beliefs, values, language, customs, traditions and even ideologies.

There are no set parameters to measure these impacts but the erosion of values, imitation of tourist behaviour, etc. puts a strain on the socio-cultural capacity of the destination. Similarly, carrying capacity in relation to the ecological factors is determined keeping in view or analyzing the effects of tourism activity on the eco system of the destination as a whole.

Important parameters have to be considered by the multi-stakeholder process in which governments and industry which have always had a voice in decision making have to hear the voice of the communities and the sub-groups within communities to create sustainable safeguards. Physical and built environments have an important role in creating comfort zones for the resident population and cannot be transformed in ways that are detrimental to this need of the community. To-day capacity building and need based development have been replaced by marketing and management. The principles of these new disciplines are not based on host community perceptions. They are developed through the case study method and then universalized. In the case of carrying capacity however, the specific is more crucial than the universal. In the free market model, carrying capacity is consumer-led rather than resource or community-led and it is here that problems may emerge. For example, let us take a situation where monuments are closed on Mondays. Tourists may be in the town or city or site only for that day when all monuments are shut.

14.8 EXPECTED QUESTIONS

1. What do you understand by the term carrying capacity?
2. Write an essay on tourist carrying capacity?
3. What are the several elements of tourist carrying capacity?
4. Enlisted and describe the potential determinants of tourist carrying capacity?
5. Define the measuring attempts of tourist carrying capacity?

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UNIT 15: ROLE AND CONTRIBUTION OF VOLUNTARY ORGANIZATIONS IN PROMOTION OF ENVIRONMENT FRIENDLY TOURISM

STRUCTURE:

15.1   Introduction

15.2   Objectives

15.3   Environment friendly tourism

15.4   Promotional phenomenon of environment friendly tourism

15.5   Role and Contribution of Voluntary Organizations in Promotion of Environment Friendly Tourism

15.6   Summary

15.7   Expected Questions

15.8   References

15.1 INTRODUCTION

In this unit, we will discuss on Environment friendly tourism. To implement the environment friendly tourism, ecotourism as a tool is very effective. The term ecotourism means to make a synergy between tourism and environment conservation. Tourism and environment are correlated to each other in many ways. In this unit, through understanding will be establishing to know the various parameters of dependency of tourism on flora and fauna. After that, the next topic will be to know and understand the promotional phenomenon of environment friendly tourism. In order to conserve the environment, tourism promotional activities are crucial.

After that the next topic will be to know the various role and contributions of Voluntary Organizations in international arena in the promotion and conservation of Environment Friendly Tourism. The organizations are working to make a consensus between tourism activities and local conservation of environment. The involvements of local communities are important for overall conservation and the promotion of environment friendly tourism.

15.2 OBJECTIVES

After reading this unit learner will be able:

*   To understand the concept of environment friendly tourism
*   To know about the importance of ecotourism
*   To understand the promotional phenomenon of environment friendly tourism
*   To examine the role of all the stakeholders in environment friendly tourism
*   To aware about the international voluntary organizations working in conservation and promotion of environment friendly tourism

15.3 ENVIRONMENT FRIENDLY TOURISM

Environment tourism: The term "Environment Tourism" is involving travel to areas of natural or ecological interest, typically under the guidance of a naturalist, for the purpose of observing wildlife and learning about the environment. In this regard, ecotourism supports the concept of environment tourism.

The term "ecotourism" means that type of tourism which is designed to contribute to the protection of the environment or at least minimize damage to it, often involving travel to areas of natural interest in developing countries or participation in environmental projects. It involves tourism to those places having unspoiled natural resources. It is used as a toll to exotic or threatened ecosystems to observe wildlife or to help preserve nature. Ecotourism can also be called as environment friendly tourism.

Concept of Ecotourism: Ecotourism is a form of tourism involving visiting fragile, pristine, and relatively undisturbed natural areas, intended as a low-impact and often small scale alternative to standard commercial (mass) tourism. Its purpose may be to educate the traveler, to provide funds for ecological conservation, to directly benefit the economic development and political empowerment of local communities, or to foster respect for different cultures and for human rights.

Since the 1980s ecotourism has been considered a critical endeavour by environmentalists, so that future generations may experience destinations relatively untouched by human intervention. Several university programs use this description as the working definition of ecotourism. Generally, ecotourism deals with living parts of the natural environments. Ecotourism focuses on socially responsible travel, personal

growth, and environmental sustainability. Ecotourism typically involves travel to destinations where flora, fauna and cultural heritage are the primary attractions. Ecotourism is intended to offer tourists insight into the impact of human beings on the environment, and to foster a greater appreciation of our natural habitats.

Responsible ecotourism programs include those that minimize the negative aspects of conventional tourism on the environment and enhance the cultural integrity of local people. Therefore, in addition to evaluating environmental and cultural factors, an integral part of ecotourism is the promotion of recycling, energy efficiency, water conservation, and creation of economic opportunities for local communities. For these reasons, ecotourism often appeals to advocates of environmental and social responsibility.

Criteria in Ecotourism: Ecotourism is a form of tourism that involves visiting natural areas — in the remote wilderness or rural environments. According to the definition and principles of ecotourism established by The International Ecotourism Society (TIES) in 1990, ecotourism is "Responsible travel to natural areas that conserves the environment and improves the well-being of local people." (TIES, 1990). Martha Honey, expands on the TIES definition by describing the seven characteristics of ecotourism, which are:
- Involves travel to natural destinations
- Minimizes impact
- Builds environmental awareness
- Provides direct financial benefits for conservation
- Provides financial benefits and empowerment for local people
- Respects local culture
- Supports human rights and democratic movements such as:
- conservation of biological diversity and cultural diversity through ecosystem protection
- promotion of sustainable use of biodiversity, by providing jobs to local populations
- tourism to unspoiled natural resources, with minimal impact on the environment being a primary concern.
- sharing of socio-economic benefits with local communities and indigenous peoples by having their informed consent and participation in the management of ecotourism enterprises
- minimization of tourism's own environmental impact

- affordability and lack of waste in the form of luxury
- local culture, flora and fauna being the main attractions
- local people benefit from this form of tourism economically, often more than mass tourism

Ecotourism Society Pakistan (ESP) explains, "Ecotourism is a travel activity that ensures direct financial support to local people where tourism activities are being generated and enjoyed.

It teaches travellers to respect local cultures of destinations where travellers are visiting. It supports small stakeholders to ensure that money must not go out from the local economies. It discourages mass tourism, mass constructions of hotels, tourism resorts and mass activities in fragile areas."

For many countries, ecotourism is not simply a marginal activity to finance protection of the environment, but is a major industry of the national economy. For example, in Costa Rica, Ecuador, Nepal, Kenya, Madagascar and territories such as Antarctica, ecotourism represents a significant portion of the gross domestic product and economic activity.

Ecotourism is often misinterpreted as any form of tourism that involves nature (see Jungle tourism). In reality, the latter activities often consist of placing a hotel in a splendid landscape, to the detriment of the ecosystem.

According to them ecotourism must above all sensitize people to the beauty and the fragility of nature. They condemn some operators as green-washing their operations: using the labels of "green" and "eco-friendly", while behaving in environmentally irresponsible ways.

Although academics disagree about who can be classified as an ecotourist and there is little statistical data, some estimate that more than five million ecotourists—the majority of the ecotourist population—come from the United States, with many others from Western Europe, Canada and Australia.

Currently, there are various moves to create national and international ecotourism accreditation programs, although the process is also controversial. National ecotourism certification programs have been put in place in countries such as Costa Rica, Australia, Kenya, Estonia and Sweden.

15.4 PROMOTIONAL PHENOMENON OF ENVIRONMENT FRIENDLY TOURISM

Environment friendly tourism or ecotourism is promoted mainly to improving the concept of sustainability. Under this concept, following three headings are considered:

- Regulation and accreditation
- Guidelines and education
- Small scale, low growth and local control
- Regulation and accreditation

Because the regulation of ecotourism may be poorly implemented or nonexistent, ecologically destructive green-washed operations like underwater hotels, helicopter tours, and wildlife theme parks can be categorized as ecotourism along with canoeing, camping, photography, and wildlife observation. The failure to acknowledge responsible, low-impact ecotourism puts legitimate ecotourism companies at a competitive disadvantage. Many environmentalists have argued for a global standard of accreditation, differentiating ecotourism companies based on their level of environmental commitment. A national or international regulatory board would enforce accreditation procedures, with representation from various groups including governments, hotels, tour operators, travel agents, guides, airlines, local authorities, conservation organizations, and non-governmental organizations.

The decisions of the board would be sanctioned by governments, so that non-compliant companies would be legally required to disassociate themselves from the use of the ecotourism brand.

Crinion suggests a Green Stars System, based on criteria including a management plan, benefit for the local community, small group interaction, education value and staff training. Ecotourists who consider their choices would be confident of a genuine ecotourism experience when they see the higher star rating.

In addition, environmental impact assessments could be used as a form of accreditation. Feasibility is evaluated from a scientific basis, and recommendations could be made to optimally plan infrastructure, set tourist capacity, and manage the ecology. This form of accreditation is more sensitive to site specific conditions.

Some countries have their own certification programs for ecotourism. Costa Rica, for example, runs the Certification of Sustainable Tourism (CST) program, which is intended to balance the effect that business has on the local environment. The CST program focuses on a

company's interaction with natural and cultural resources, the improvement of quality of life within local communities, and the economic contribution to other programs of national development.

CST uses a rating system that categorizes a company based upon how sustainable its operations are. CST evaluates the interaction between the company and the surrounding habitat; the management policies and operation systems within the company; how the company encourages its clients to become an active contributor towards sustainable policies; and the interaction between the company and local communities / the overall population. Based upon these criteria, the company is evaluated for the strength of its sustainability. The measurement index goes from 0 to 5, with 0 being the worst and 5 being the best.

Guidelines and education: An environmental protection strategy must address the issue of ecotourists removed from the cause-and-effect of their actions on the environment. More initiatives should be carried out to improve their awareness, sensitize them to environmental issues, and care about the places they visit.

Tour guides are an obvious and direct medium to communicate awareness. With the confidence of ecotourists and intimate knowledge of the environment, they can actively discuss conservation issues. A tour guide training program in Costa Rica's Tortuguero National Park has helped mitigate negative environmental impacts by providing information and regulating tourists on the parks' beaches used by nesting endangered sea turtles.

Small scale, low growth and local control: The underdevelopment theory of tourism describes a new form of imperialism by multinational corporations that control ecotourism resources. These corporations finance and profit from the development of large scale ecotourism that causes excessive environmental degradation, loss of traditional culture and way of life, and exploitation of local labor.

In Zimbabwe and Nepal's Annapurna region, where underdevelopment is taking place, more than 90 percent of ecotourism revenues are expatriated to the parent countries, and less than 5 percent go into local communities.

The lack of sustainability highlights the need for small scale, slow growth, and locally based ecotourism. Local peoples have a vested interest in the well being of their community, and are therefore more

accountable to environmental protection than multinational corporations. The lack of control, westernization, adverse impacts to the environment, loss of culture and traditions outweigh the benefits of establishing large scale ecotourism.

The increased contributions of communities to locally managed ecotourism create viable economic opportunities, including high level management positions, and reduce environmental issues associated with poverty and unemployment. Because the ecotourism experience is marketed to a different lifestyle from large scale ecotourism, the development of facilities and infrastructure does not need to conform to corporate Western tourism standards, and can be much simpler and less expensive. There is a greater multiplier effect on the economy, because local products, materials, and labor are used. Profits accrue locally and import leakages are reduced.

The Great Barrier Reef Park in Australia reported over half of a billion dollars of indirect income in the area and added thousands of indirect jobs between 2004 and 2005. However, even this form of tourism may require foreign investment for promotion or start up. When such investments are required, it is crucial for communities for find a company or non-governmental organization that reflects the philosophy of ecotourism; sensitive to their concerns and willing to cooperate at the expense of profit.

The basic assumption of the multiplier effect is that the economy starts off with unused resources, for example, that many workers are cyclically unemployed and much of industrial capacity is sitting idle or incompletely utilized. By increasing demand in the economy it is then possible to boost production. If the economy was already at full employment, with only structural, frictional, or other supply-side types of unemployment, any attempt to boost demand would only lead to inflation. For various laissez-faire schools of economics which embrace Say's Law and deny the possibility of Keynesian inefficiency and under-employment of resources, therefore, the multiplier concept is irrelevant or wrong-headed.

As an example, consider the government increasing its expenditure on roads by $1 million, without a corresponding increase in taxation. This sum would go to the road builders, who would hire more workers and distribute the money as wages and profits. The households receiving these incomes will save part of the money and spend the rest on consumer goods. These expenditures in turn will generate more jobs,

wages, and profits, and so on with the income and spending circulating around the economy.

The multiplier effect arises because of the induced increases in consumer spending which occur due to the increased incomes — and because of the feedback into increasing business revenues, jobs, and income again. This process does not lead to an economic explosion not only because of the supply-side barriers at potential output (full employment) but because at each "round", the increase in consumer spending is less than the increase in consumer incomes. That is, the marginal propensity to consume (mpc) is less than one, so that each round some extra income goes into saving, leaking out of the cumulative process. Each increase in spending is thus smaller than that of the previous round, preventing an explosion.

Moreover, ecotourism can also be used to promote natural resource management. Natural resource management can be utilized as a specialized tool for the development of ecotourism. There are several places throughout the world where the amount of natural resources are abundant. But, with human encroachment and habitats these resources are depleting.

Without knowing the proper utilization of certain resources they are destroyed and floral and faunal species are becoming extinct. Ecotourism programmes can be introduced for the conservation of these resources. Several plans and proper management programmes can be introduced so that these resources remain untouched. Several organizations, NGO's, scientists are working on this field.

Natural resources of hill areas like Kurseong in West Bengal are plenty in number with various flora and fauna, but tourism for business purpose poised the situation. Researcher from Jadavpur University presently working in this area for the development of ecotourism which can be utilized as a tool for natural resource management.

In Southeast Asia government and nongovernmental organisations are working together with academics and industry operators to spread the economic benefits of tourism into the kampungs and villages of the region. A recently formed alliance, the South-East Asian Tourism Organisation (SEATO), is bringing together these diverse players to allay resource management concerns.

A 2002 summit held in Quebec led to the 2008 Global Sustainable Tourism Criteria, a collaborative effort between the UN Foundation and other advocacy groups. The criteria, which are voluntary, involve the

following standards: "effective sustainability planning, maximum social and economic benefits for local communities, minimum negative impacts on cultural heritage and minimum negative impacts on the environment."

15.5 ROLE AND CONTRIBUTION OF VOLUNTARY ORGANIZATIONS IN PROMOTION OF ENVIRONMENT FRIENDLY TOURISM

Following are the Voluntary Organizations Ecotourism Associations working in promotion of Environment Friendly Tourism:

TOURISM INDUSTRY ASSOCIATION (TIA) OF NEW ZEALAND (WWW.TIANZ.ORG.NZ)

Introduction: The Tourism Industry Association (TIA) New Zealand is the largest representative body of tourism operators in New Zealand. It is a membership-based and private sector trade organisation with about 1500 members who collectively make up 85% of the country's tourism turnover. The landscape in tourism is continuing to change at a mind-boggling rate. In this environment our industry needs leadership that constantly finds ways of both protecting and growing tourism's health and profile.

- **Leadership -** with over 1500 members from the big tourism players to the small, we are the best placed organisation to lead from the front. We have access to the people and organizations whose decisions affect your business

- **Save money –** you will get significant benefits, including discounts on TIA-organized events such as TRENZ and discounts of up to 50% on a range of accommodation, transport and business services plus bottom-line savings from our commercial partners – Mercury, Westpac, JLT/Lumley and Telecom.

- **Free, expert advice –** you'll get support when you need it from the TIA team, on everything from health and safety to dealing with the media in a crisis. We are always available and keen to help.

- **Advocacy –** we speak up when it counts, influencing political decision makers and vigorously representing our members at all levels of the government, at meetings, in submissions and through the media.

- **Tourism Events & Publications:** Key TIA events include TRENZ, the tourism industry's largest annual international trade show, the TIA Summit, and the Tourism Industry Awards. We also run a range of other tourism related events and workshops to help our members grow their buisness.

- **TRENZ:** TRENZ is the largest international showcase of New Zealand's leading tourism and travel specialists. Managed by the Tourism Industry Association New Zealand (TIA), TRENZ brings together around 250 leading New Zealand tourism operators with around the same number of international tourism buyers.

    A media programme for international and domestic media is run in association with TRENZ. TRENZ is an important forum for the New Zealand industry to showcase product, forge relationships with key international tourism buyers and write business for the seasons ahead.

- **Tourism Industry Awards:** The Tourism Industry Awards aim to recognize and celebrate the country's most successful tourism businesses.

    They also highlight individuals who have made an outstanding contribution to the tourism industry, and the sector's rising stars. For more information and history of the awards please visit the Awards website - www.tourismawards.co.nz.

- **TIA Workshops:** TIA runs a range of workshops to help tourism operators improve their buisness capability. TIA members recieve a great discounted attendence rate. Workshop topics range from making the most of social media and online marketing to how to be a great employer and health and safety.

- **Communications & Publications:** TIA provides a wide range of communications and publications to members to help them stay up to date with issues affecting the industry, and market insights. These include T-Mail, a weekly electronic newsletter and the daily Today's tourism news.

    Tourism Business, a bi-monthly magazine, is in produced in association with TIA and distributed free to members. It offers ideas and information to inform and inspire. If you have any general queries regarding membership please contact info@tianz.org.nz.

- **TIA Strategic Plan:** TIA's vision is leading and supporting a vital and healthy visitor economy. It includes an outline of our five major strategic initiatives:

- **National Tourism Plan:** Leading and owning the development of an aspirational, challenging and measurable National Tourism Plan that is capable of successfully dealing with the issues of diversity and isolation in the tourism marketplace, and which unites and inspires the industry to adapt and to succeed.

- **Tourism Funding:** Ensuring that private sector discussions regarding the issues of regional and national tourism taxing are conducted

efficiently, involve the right people, are efficient and well - informed, and that effective communication to members is maintained throughout the process.

- **Tourism Intelligence:** Driving an initiative that, with greater levels of commitment, cohesion, focus and strategic cooperation from both the public and private sectors, will result in the creation of easily - accessible tourism sector intelligence that fosters relevant, accurate, timely and practical outputs.

- **China Growth Support:** Playing a strong role, in both leadership and support, of Phase 2 implementation of MBIE's China Market Review (CMR) project, while also looking for ways to effectively support other China tourism initiatives, to assist in the challenge of ensuring continuing growth in both visitor numbers and visitor expenditure

- **Adventure Safety:** Maintaining current intensive involvement and focus on adventure safety, including successful delivery of the full suite of adventure safety guidelines provided for in TIA's contract with MBIE, to develop a culture within NZ's adventure tourism industry where all operators embrace and consistently apply proper safety methods and standards.

The strategic focuses of TIA are as follows:

- **TIA Events:** Continually developing, improving and then delivering a suite of outstanding member and industry - valuable events including TRENZ, the TIA Summit and regional TIA member road shows.

- **Policy and Advocacy:** Fearlessly providing active policy solutions and effective advocacy, which are both well - informed and well - communicated, on behalf of our members and our industry.

- **Communications:** Providing clear, timely, modern and incisive internal and external communications on a range of matters relevant to TIA, our members and our industry, leading to wide recognition of TIA as being the very credible 'voice of the tourism industry'.

- **Tourism Information:** Igniting and fostering (either alone or in partnership) the creation of a greater depth of industry -specific market research which is of genuine added value for our members and our industry with specific priority focus on relevancy, accuracy, timeliness and easy accessibility.

- **Relationship and Partnerships:** Creating, growing and enhancing a comprehensive range of relevant key relationships and partnerships.

TIA's Code of Ethics

- Recognize and affirm customers' rights to courteous, prompt and honest service.
- Maintain high standards and fair practice in all business transactions.
- Accord customers of all cultural origin equal respect and consideration.
- Price goods and services fairly and unambiguously.
- Ensure that advertising is accurate and truthful, free of anything which could mislead or otherwise be contrary to the public interest.
- Establish and maintain procedures for the prompt handling of complaints, ensuring that all inquiries, refunds and returns of goods (where applicable) are dealt with properly and reasonably.
- Keep proper books of accounts and conduct all affairs in a professional manner.
- Uphold and observe all laws and regulations pertaining to their establishment, particularly those governing the provision and sale of goods and services.
- Discharge all responsibilities to employees by observing all laws and awards, by giving proper training and instruction, by providing adequate working conditions, equipment and facilities and supervising standards of safety and work practice.
- Act in an environmentally responsible way.
- Uphold the interests and reputation of New Zealand as a quality destination for visitors and travelers, offering friendly, hospitable service.

TIA's Role and Contribution through their Policy System

Key policy areas of TIA are:

Conservation: TIA submission on the three South Island CMS (13 September, 2013): Following on from its four Conservation Management Strategy workshops with the Department and operators (Te Anau, Queenstown, Lake Tekapo and Christchurch), TIA has made a generic submission on the three South Island CMSs.

- **Submission on the Game Animal Council Bill (23 May, 2012):** The association has submitted to the Local Government and Environment select Committee on the Game Animal Council Bill. While TIA remains in support of the Bill, it believes the council is also the right body to oversee mandatory guide licensing, a recommendation also supported by the Professional Hunting Guides Association.

- **Gazetted Wilderness Areas (15 September, 2011):** TIA has made a submission to the Department of Conservation (DOC) commenting on whether commercial access should be permitted in gazetted wilderness areas. TIA supports concessionaire activity within these areas, provided it is of a type and frequency that preserves the intended outcomes of wilderness areas.

- **Abel Tasman Foreshore Scenic Reserve (July, 2011):** After meeting with members who operate tourism businesses in and around Abel Tasman National Park, TIA has submitted to the Department of Conservation's Abel Tasman Foreshore Scenic Reserve draft management plan of June 2011. The submission highlights the value of tourism to the area and suggests ways that management of the Abel Tasman Foreshore Scenic Reserve can benefit both tourism and conservation values.

- **Tongariro National Park Management Plan Partial review (December, 2010):** TIA has submitted on the partial review of the Draft Tongariro National Park Management Plan highlighting concerns about the arguments for removing the cap on the number of transport concessionaires. The review outcomes are still being considered and TIA has been invited to speak at a hearing on 12 February, 2011.

- **Stocktake of Schedule 4 of the Crown Minerals Act and beyond (May, 2010):** Following extensive consultation with members and many others, TIA has submitted on the government's proposals to potentially mine on Schedule 4 land. Please read the full submission by clicking on the link above. No new mining will be permitted within National Parks or other schedule 4 land.

- **Schedule 4 Fact Sheet (March, 2010):** This information is sourced from the government's discussion document, maximising our Mineral Potential: Stocktake of Schedule 4 of the Crown Minerals Act and beyond.

- **Alignment of Concessions and Resource Consents considered (December, 2009):** After speaking with members, TIA submitted on the desirability of changes to enable the concession and resource consent processes to be synchronised at key stages such as application, requests for further information and notification and hearing; as well as the desirability of a single Board of Enquiry process for applications of national significance that require both concession and consent.

- **Subantarctic Marine Protection Planning Forum Consultation (July, 2009):** TIA has recommended full marine protection out to 12

miles around the subantarctic islands of Antipodes, Bounty and Campbell. The submission to the Subantarctic Marine Protection Planning Forum was made in response to a Consultation Document (June 2009) regarding implementation of the Marine Protected Areas Policy in the Subantartic region.

- **Mount Aspiring National Park draft Management Plan Submission (July, 2009):** TIA has made a submission on the Mount Aspiring National Park draft Management Plan. The submission was based on member feedback and makes a number of recommendations the the Department of Conservation (DOC). A number of TIA's points led to changes in the final Management plan, which is awaiting approval by the New Zealand Conservation Authority.

- **Draft Stewart Island / Rakiura Conservation Management Strategy (SIRCMS) and the Draft Rakiura National Park Management Plan (RNPMP) (March, 2009):** TIA has made a submission to the Draft Stewart Island / Rakiura Conservation Management Strategy (SIRCMS) and the Draft Rakiura National Park Management Plan (RNPMP). The submission which contains a number of recommendations, can be read here.

- **Draft Waikato Conservation Management Strategy (January, 2009):** TIA has made a submission to the Draft Waikato Management Strategy. The submission which contains a number of recommendations to DOC, can be read here.

- **New Zealand Coastal Policy Statement (May, 2008):** TIA has made a submission to the Department of Conservation on the New Zealand Coastal Policy Statement that sets the future direction for how the country's coastline is managed.

Employment:

- **Holidays Amendment Bill (17 September, 2010):** A submission had been made by TIA to Parliament on proposed changes to the Holidays Act. The main changes include the ability of employees to cash in their fourth week's leave, an averaging formula for calculating holiday and sick pay, transferring public holidays, medical certificates for sick leave and increases in penalties for non-compliance. The Bill was passed allowing employees to cash in a fourth week's leave and transfer public holidays. A simpler calculation has also been introduced to calculate average daily pay.

- **Employment Relations Amendment Bill (No 2) (September, 2010):** TIA has submitted to Parliament on the Employment Relations

Amendment Bill (No 2) that extends the 90 day probationary employment period to workplaces of more than 20 staff and clarifies rules relating to union access and collective bargaining. The Bill was passed extending the 90 day probationary period to workplaces of more than 20 staff.

- **Employment Relations (Rest and Meal Breaks) Amendment Bill (June, 2010):** TIA has lodged a submission to Parliament in support of the government's proposals to bring more flexibility into the rest and meal break provisions of the Employment Relations Act. The Bill was passed introducing more flexibility around rest and meal break provisions which will make it easier for tourism businesses, especially those in the adventure sector.

- **Holidays Act (August, 2009):** Following extensive feedback from members, TIA has lodged a submission with the Department of Labour on the review of the Holidays Act. Included in the submission are results from the member survey, as well as comment on some of the key aspects of the Review, namely the calculation of relevant daily pay, the trading of the fourth week's holiday for cash and the transfer of public holidays. Following extensive feedback from members, TIA lodged a submission on the review of the Holidays Act. In changes announced by the government in July 2010, relevant daily pay calculations were simplified, employees may cash in a week's leave and more flexibility now exists to transfer public holidays.

- **Employment Relations (Breaks and Infant Feeding) Amendment Bill (May, 2008):** The government is reviewing employment relations law and is proposing to introduce mandatory rest and meal break periods into the workplace. A plan to require employers to provide facilities for infant feeding at work is also proposed. TIA believes the legislation for rest and meal breaks is unnecessary but it supports facilities for feeding infants at work where it is reasonable and practicable to do so.

Immigration:

- **Immigration Temporary Work Policy (April, 2008):** TIA has provided a submission to the Department of Labour (DOL) on temporary work policy and how it could be helpful for tourism businesses. To inform this submission, we received comments from Members as well as feedback at the recent Immigration Forum in Queenstown in March. Some of the key points covered include improvements to the application process, duration of stay in New Zealand, work to

residence pathways, English language proficiency and working holiday schemes. The Association will be working with officials in the DOL this year to progress some of the issues discussed in the submission.

Local Government:

- **Local Government Act 2002 Amendment Bill (July, 2012):** TIA has submitted to the Local Government Act 2002 Amendment Bill, calling for councils to continue to play a role in regional economic development, through investment in visitor services and infrastructure, events and festivals, and regional tourism promotion.

- **Wellington City Council Long Term Plan 2012-22 (May, 2012):** TIA has submitted to the Wellington City Council on its long term plan, focussing on continued funding for destination marketing and visitor infrastructure.

- **Queenstown Lakes District Council Long Term Plan 2012-2022 (May, 2012):** TIA has submitted to the Queenstown Lakes District Council on their long term plan commenting mainly on the Council's so-called 'visitor cost' that will impact tourism businesses and visitors in the region.

- **Rotorua District Council Long Term Plan 2012-2022 (May, 2012):** TIA has submitted to the Rotorua District Council on their long term plan, principally in support of hotels and bed and breakfast establishments that may be potentially disadvantaged by the Council's proposals.

- **Auckland Council Long Term Plan - Getting Auckland Moving, Alternative Funding for Transport Discussion Document (23 March, 2012):** TIA has lodged a submission to the Auckland Council on funding options for Auckland's future transport needs.

    This is a detailed paper outlining the Association's opposition to the use of bed and airport taxes as a funding mechanism. The paper draws from overseas evidence to show that bed and airport taxes are unfair, inequitable and inefficient as a revenue raising mechanism.

- **Christchurch City Council Draft Central City Plan (16 September, 2011):** TIA and Christchurch & Canterbury Tourism made a joint submission on plans to rebuild central Christchurch. We called for greater emphasis on economic recovery, including giving priority to rebuilding commercial accommodation and the convention centre. We also want to see 'zones of normality' established in the central city as soon as possible to help alleviate visitor loss.

- **Queenstown Lakes District Council Annual Plan 2011 / 2012 (18 May, 2011):** Following feedback from members, TIA has made a submission to the QLDC opposing a plan to reduce gritting on roads in the Queenstown Lakes area on the basis that it will compromise the safety of visitors as well as the reputation of the region.

- **Rotorua Visitor Industry Representation Review (16 July, 2010):** TIA has provided a submission to the Rotorua District Council commenting on the review of visitor industry representation in the city.

- **Local Government Act 2002 Amendment Bill (18 June, 2010):** TIA is concerned that current investment by local authorities in tourism services and infrastructure could be at risk if this Bill is passed. The Bill was passed but tourism will not be included in the definition of core services.

- **Dunedin City Council Annual Plan 2010 / 2011 (April 12, 2010):** In support of members, TIA has lodged a submission with the Dunedin City Council on its Annual Plan for 2010/2011 and specifically a proposal to introduce a targeted tourism rate in the city. The Dunedin City Council scaled back plans for the introduction of a targeted tourism rate that was to apply to bed and breakfast establishments.

- **Westland District Council Draft Annual Plan 2010 / 11 (February 18, 2010):** In support of @home NEW ZEALAND and its members in the Westland area, TIA has made a submission commenting on a proposal by the Westland District Council to introduce a commercial rating system for home based businesses.

- **Auckland Super City (February 15, 2010):** TIA has provided a submission to the parliamentary select committee considering the future governance and structure for the new Super City in Auckland. The Association supports a standalone regional tourism organisation as the most effective way to promote and manage visitor activity in Auckland.

    TIA was unsuccessful in persuading the Parliamentary Select Committee considering future governance arrangements for the Auckland Super City that Tourism Auckland should continue to be a stand-alone agency.

ENVIRONMENT:

- **Submission to the Amendment of the Resource Management (Marine Pollution) Regulations 1998 (14 June, 2013):** TIA has submitted to the Amendment of the Resource Management (Marine Pollution) Regulations 1998. In essence, these amendments are

bringing the regulations covering NZ coastal waters into line with NZ's international marine pollution prevention obligations.

- **New Zealand Petroleum and Minerals (23 April, 2012):** TIA has submitted on the review of the Crown Minerals Act 1991 regime. While the association supports strengthening and broadening NZ's economic base, it calls for more comprehensive analysis and communication of the environmental and reputational risks associated with each part of the petroleum and mineral sector.

- **Freedom Camping Bill submission (29 June, 2011):** TIA has made a submission on the Freedom Camping Bill. While supporting the intent of the Bill, TIA has cautioned decision-makers to carefully consider submissions made by land managers, campervan companies and others who will be directly affected by the Bill. TIA has also reiterated the NZ Responsible Camping Forum (NZRCF) position which first and foremost supports strong national and local camping information for visitors, with enforcement used only as the last resort.

- **Biodiversity submission (May, 2011):** TIA has written a submission on the proposed NPS on Indigenous Biodiversity. While our Association believe the loss of indigenous biodiversity is of great concern, our submission explores some strengths and weaknesses of the proposed NPS and whether it will deliver the promised guidance and support to councils.

ECOTOURISM KENYA (EK)   (WWW.ECOTOURISMKENYA.ORG)

Introduction: Ecotourism Kenya (EK), formerly known as Ecotourism Society of Kenya (ESOK), is a civil society organization that was established in 1996. Founded with enormous support from the tourism industry in Kenya, it plays a key role in ensuring that Kenya's tourism is sustainable, both in terms of concern for the environment and for the welfare of local communities.

Ecotourism Kenya is a membership organization and is one of seven private-sector associations that make up the Kenya Tourism Federation (KTF). EK is an executive board member of the newly formed Federation of Community Tourism Organizations (FECTO) and the Global Travel and Tourism Partnership (GTTP) Kenya. As a membership organization, Ecotourism Kenya brings together individuals, Community Based Organizations (CBOs) and tourism businesses in a forum where they discuss the concept of ecotourism and use the resultant knowledge to improve their operations towards best practices.

Ecotourism Kenya currently has a membership of approximately 440 individuals, companies, community based organizations. These members hold an Annual general Meeting (AGM) once every year and elect a Management Board which takes up the role of an Executive Committee mandated with the task of providing overall strategic guidance including approving plans and budgets.

The organization has a secretariat of 11 permanent staff members who have been mandated to execute activities of Ecotourism Kenya as outlined in the strategic plan. The secretariat is headed by the Chief Executive Officer who provides liaison between the management board and the secretariat. Other staff in the secretariat include: Public Relations and Communications Officer; Programmes Officer; Ecorating Officer; Resource Mobilization and Fundraising Officer; Accountant; Coast Region Officer; Administrative Assistant; Program Assistant (Publications and Communication); Program Assistant (Leadership and Mentorship Program); and Program Assistant(Standards and Best Practices).

The Organisation has 5 main advisory sub-committees that offer support to the Management Board and technical advice to the Ecotourism Kenya Secretariat in conducting the Organisations mandate. These sub-committees are:

- Community Outreach Program Committee
- Ecorating Committee
- PR and Marketing Committee
- Fundraising Committee
- Advocacy Committee

Ecotourism Kenya's membership is spread throughout the country, therefore the organisation has a countrywide reach and representation.

Principles of EK

Ecotourism Kenya is guided by the following principles:

- **Vision:** To be a leader in the knowledge and practice of ecotourism
- **Mission:** To effectively link tourism, communities and conservation for sustainable tourism development in Kenya
- **Goal:** To promote tourism practices that will conserve Kenya's natural environment and improve livelihoods of associated communities.
- **Value Statement:** At Ecotourism Kenya, we promote sustainable utilization of resources for sustained livelihoods. We do this by putting emphasis on respect for the environment, respect for local people and their cultures and equitable sharing of responsibilities and benefits.

- **Environmental Policy:** Our policy is to ensure incorporation of sound environmental and social practices in new and existing tourism enterprises. We seek to increase recognition of environmental and social issues in the development of tourism in Kenya and in all work that we undertake. Toward this end, we intend to remain at the forefront in the implementation of environmental best practices in tourism development, and to promote social responsible practices applicable to tourism.

Role and Contribution of EK

The following are the role and contribution of EK:

- Understanding the concept of Environment Friendly Ecotourism
- The Eco-rating Certification Scheme
- Featured Community
- Featured Eco-rated Facility
- Programs areas
- Eco-warrior award
- Platform for associations

The explanations are as follows:

- **Understanding the concept of Environment Friendly Ecotourism:** According to The International Ecotourism Society, ecotourism is, 'Responsible travel to natural areas that conserves the environment and improves the well-being of local people'. Ecotourism Australia defines the term as 'Ecologically sustainable tourism with a primary focus on experiencing natural areas that fosters environmental and cultural understanding, appreciation and conservation'. At Ecotourism Kenya, the definition of Ecotourism as 'the involvement of tourists in environmental conservation activities directly linked to addressing human development needs, and promotes equitable sharing of benefits accrued from tourism with local communities while supporting their nature conservation values'.

It is actually all of the above. The underlying words are 'responsible tourism' and 'local cultures'. It brings together conservation, communities and tourism. Ecotourism is NOT a type of tourism like other types of tourism e.g. Adventure, beach, culture-based, wildlife, sports, scenic, specialized etc. Not a comparison or alternative to mass tourism, not an exclusive way of doing tourism. But it is a tourism business approach or strategy for achieving the goals of sustainable development. Hence, ecotourism principles are applicable to all types of tourism and tourism products.

The "Models of Ecotourism" are Conservancies (nature, wildlife, shrines), Tourism enterprises (lodges, camps, treks, etc.), Tourism sector-based Corporate Social Responsibility (CSR), Travellers' philanthropy, Tourism supply chain management, Tourism investment - Private-Public Partnerships and Direct capacity-building community development Programs. The "Principles governing ecotourism" are to encourage travel to natural areas, to minimize impact of tourism activities on natural attractions, to recognize and build awareness about local conservation values and their importance to society, to provide direct benefits and empowerment for local people at destinations without retrogression on environmental, cultural or local living standards, to respect local people, their customs and culture and support sustainable development of local economies through direct involvement and participatory decision-making.

- **The Eco-rating Certification Scheme:** The Eco-rating certification Scheme is a sustainable tourism certification program that aims to promote responsible tourism in Kenya. Launched in 2002 by Ecotourism Kenya in cooperation with tourism stakeholders in Kenya, the programs focus is to recognise best practices in environmental conservation, responsible resource use and socio-economic investment among tourism accommodation facilities by awarding qualified applicants assessed under the scheme with a Bronze, Silver or Gold eco-rating certification based on their performance. The Eco-rating certification scheme follows a systematic procedure that assesses a tourism accommodation facility on its environmental, economic and socio-cultural performance. The criteria have been designed to suit local requirements and are aligned to the Global Sustainable Tourism Criteria (GSTC) formed under the umbrella of the United Nations (UN). Through the Eco-rating certification scheme, Ecotourism Kenya aims to promote environmental, economic and social best practices by accommodation facilities within the tourism industry through:

➢ Promoting and increasing awareness of environmentally and socially sound business practices (educational / change of attitude towards environmental governance and social responsibility)

➢ Promoting the increased contribution of tourism to social-economic development (developmental)

➢ Promoting the increased contribution of tourism to conservation of the natural resources upon which tourism is dependent (conservation)

➢ Improved destination image, thus potentially attracting more tourists (marketing advantage)

- **Featured Community:** In this section, the example of Mount Longonot Adventures (Mt.longonot guides and porters youth club) is best suited.

Mt. Longonot Adventures is a youth community based enterprise, which offers unique guided nature walks with a package that includes porting luggage, camping inside or at the base of Mt. Longonot National Park, bird watching, rock climbing on the walls of Mt. Longonot crater and outside catering services. Other than tour guiding within the central Rift tourist circuit, they as well extend the service to other Parks in the county. They arrange for the visitors accommodation and travel needs and offer camping tents, hiking poles and cycle bike safaris for hire. Mt. Longonot Adventures is a member of Ecotourism Kenya.

It was established in 2006 under the tourism region mid rift area in rift valley lie under the district Nakuru. The group is located in Mt. Longonot area in Mai Maahiu Division of Naivasha district. The group has specialized in organising mountain climbing in Mt. Elgon, Bike riding in Longonot, Suswa and Hellsgate areas, Rock climbing, Nature walks, Presidential award hikes, game-drives and Bird watching, Game viewing and camping. The group also has camping equipment for hire.

The current partners are Kenya wildlife service (KWS), Nakuru Wildlife Conservancy (NWC), SNV, Nature Kenya and USAID & Pact Kenya. The major achievements are that all the group youth members are able to earn a decent living from the business, they have assisted in paying high school fees for the less fortune student from within the community, the group has been actively involved in environmental rehabilitation projects in the area and the group has participated in business marketing exhibitions hence able to promote their enterprise.

The major challenges are lack all the essential Climbing and Camping Equipments and facilities, lack adequate marketing and visibility, facilitating programs and activities need donations / funding, lack of marketing strategy and few equipments and facilities. The major lessons learnt are developing good marketing strategies and need for sponsors.

- **Featured Eco-rated Facility:** Ecotourism Kenya manages a certification scheme for tourism accommodation facilities based on environmental and social criteria. It divided into three headings based on the minimum criteria the organizations have to be achieved. The three categories are Gold Eco-rated, Silver Eco-rated and Bronze Eco-rated.

- **Programs areas:** Ecotourism Kenya has five programme areas as explained below:

➢ **Enterprise Development Program:** Entails offering community mobilization, advisory, training and promotion services to community based, owned and/or managed tourism enterprises. The aim is to integrate communities and community-based tourism into mainstream tourism in Kenya.

➢ **Standards & Best Practices:** This is EK's flagship program and is the only one of its kind in the East African region. This EK initiative has been used to inform other international tourism ecorating schemes including the UNEP. At present, EK is having 60 ecorated facilities– 6 Gold, 35 Silver and 19 Bronze.

➢ **Awareness Creation & Information Sharing:** This is achieved through publications and meetings, including quarterly newsletters, monthly e-letters, regional workshops and a biennial national conference. It is also achieved through the website and the resource centre.

➢ **Research & Consultancy**: The focus is on ecotourism and sustainable tourism, best practices, policy development and tourism planning and management. We also undertake social evaluation of programmes and review EIAs.

➢ **Leadership and Mentorship Program:** Provide EK members with an opportunity to gain experience nurture their skills and get enlightened about the fundamentals and practices of ecotourism. The program blends the academic and professional, theoretical and practical aspects of ecotourism while addressing the interests of participants.

• **Eco-warrior Award:** Eco-Warrior Awards recognize efforts, innovations and exceptional achievements for promoting responsible tourism and enhancing tourism sustainability which directly conserves the natural environment linked to local communities (either credible individuals or groups) through mutually beneficial and equitable partnerships. Nature conservation through community development by tourism is the essence of ecotourism. Therefore, the awards aim to celebrate ecotourism best practices in different tourism sectors and tourism set ups in Kenya. The general criteria are given for each category below. Potential nominees for each category must demonstrate clearly elements of responsible, respectful and sustainable tourism.

• **Platform for Associations**: There are several ways in which one can get involved with Ecotourism Kenya and EK partners like to be a member, partner with EK in matchmaking activities, internship opportunities, join an EK committee and take part in EK activities.

INDONESIA ECOTOURISM NETWORK (IEN / INDECO) (WWW.INDECON.OR.ID)

Introduction: Indecon is a non-profit organization focusing its activities in developing and promoting ecotourism in Indonesia. Established in 1995, Indecon have facilitated some various ecotourism stakeholders in ecotourism development in Indonesia. Skillful staff and professional associates have supported Indecon's works. Several innovations in development process and policy have also been identified during Indecon's involvement in promoting sustainable tourism in Indonesia. The main objective of IEN is Conservation and Community Participation through Ecotourism.

Role and Contributions through projects: The role and major contributions of IEN in taking and implementing the projects within their local vicinity as explained below:

UNWTO Energy Efficiency for Sustainable Tourism Development in Pangandaran: This program is the initiative of UNWTO Biodiversity Unit – supported by Federal Ministry of Environment and Nuclear Safety of Germany under the International Climate Initiative program – as its concern for sustainable tourism development in Indonesia, particularly in Pangandaran. This program aims to create various options which can be done by tourism stakeholders to anticipate climate change, both in mitigation and adaptation aspects.

Development of Destination Management Organization in Pangandaran: To continue UNWTO program in Pangandaran, Indecon is currently working together with the Ministry of Culture and Tourism Republic Indonesia to facilitate the establishment of Destination Management Organization (DMO) Pangandaran in 2010-2014. It will be developed as a collaborative management initiative; which will involve multi stakeholders proportionally and responsibly according to each roles and tasks. At the moment, a Committee of local stakeholders has been established and will be focused in the process to develop DMO.

Development of Destination Management Organization in Danau Toba: Danau Toba is one of the most popular tourism destinations in Sumatra. However, after its highest peak in 1990-ish, its number of visitors keeps declining. The reasons behind this are believed to be lack of appropriate human resources, poor tourism services and hospitality, continued degradation of environment and biodiversity, and poor diversification of tourism product and facilities. Yet, local stakeholders and

local government of Danau Toba – which covers administrative area of 7 regencies – are very enthusiastic in revitalizing this situation.

Tourism   Development   Supporting   Biodiversity   in Pangandaran, Indonesia; supported by UN World Tourism Organization (UNWTO): Indecon has been working with UN World Tourism Organization (UNWTO) in Pangandaran since 2007. The World Tourism Organization (UNWTO) had supported many countries in Asiathat were affected by the tsunami on December 2004. UNWTO has joined forces with the Government of Germany to provide a range of consultancy and advisory support in the field of biodiversity and tourism development following the Guidelines on Biodiversity and Tourism Development of the Convention on Biological Diversity (CBD).

Community in International Business; supported by ECEAT: ECEAT – European Centre for Ecological and Agricultural Tourism is the leading European organization in small-scale sustainable tourism field with special attention to rural areas and organic farming.

Facilitating Community in Developing Standard on Tourism Product, Service, and Marketing at Tangkahan, Leuser National Park, North Sumatra: The project goal was to develop marketing strategy and improve standard of Tangkahan products and services, by knowledgeable guides that would provide visitors with meaningful experience, minimized risks, and also helped the community to generate sufficient local income. Increasing significant local support and effective lobbying power at higher level were essential to achieve effective protection and utilization of the park. Indecon conducted review of current conditions of Tangkahan's tourism products and services and then followed with improvement action.

Ecotourism Product Development as Means to Supplant Illegal Logging in Tangkahan area of Leuser National Park, North Sumatra: The aim of this project was to build the capacity of local groups in Tangkahan, a village in the buffer zone of Gunung Leuser National Park, and to develop and produce ecotourism products. It was expected that successful ecotourism in Tangkahan would slow illegal logging in this portion of the national park. Using participatory approach, Indecon helped the community to create tourism activities through capacity improvement of best interpreters and interpretative trails development, including signs and information boards.

Development of Ecotourism in Rinjani National Park, West Nusa Tenggara in collaboration with Tourism Resource Consultant (TRC): The objectives of this project were to improve park management;

to foster community development on park boundaries that would benefit rural women and men, in recognition of the link between national conservation goals and local development goals; to develop responsible park tourism by encouraging ecotourism in trekking and exploring Sasak culture. Tourism Resource Consultant (TRC) acted as a leading agency collaborated with Indecon to complete this project with support by New Zealand Aid Programme (NZAID).

Development of Village Tourism in Menoreh Mountain Range, Central Java with Patrapala Foundation: **ECEAT –** European Centre for Ecological and Agricultural Tourism is the leading European organization in small-scale sustainable tourism field with special attention to rural areas and organic farming.

Role and Contributions through research programs: Indecon is actively involved in the development of ecotourism by conducting research in the field of ecotourism. These researches were focusing on topics related to development of ecotourism and sustainable tourism which comprise tourism assessment; market analysis; business, organization and tourism impact studies. Some of the examples include:

2010	Tourism Development of Environmental Friendly and Pro-Community Tourism; carried out in collaboration with FFI Aceh.
2010	Feasibility Study on Tourism Development in Gapang for IboihMakmur Co-op, Sabang, carried out in collaboration with FFI Aceh.
2010	Preliminary Identification of Tourism Attraction Potencies in Wakatobi, carried out in collaboration with Joint Program TNC-WWF.
2009	Development of Destination Management Organization in Pangandaran.
2007	Scoping Study for the Development of An Ecotourism Corridor Through Bali and Nusa Tenggara, in collaboration with Tourism Resource Consultant (TRC).
2006	Feasibility Study on Ecotourism Development in Samboja Lestari-East Kalimantan, carried out in collaborationwith Borneo Orangutan Survival (BOS).
2006	Social Impact of Ecotourism in Tangkahan, North Sumatra.
2005	Feasibility Study on Ecotourism Development in Jamursba, Papua, a study carried out in collaboration with WWF Indonesia.
2004	Research aiming to identify best practices in community-based ecotourism within conservation areas in Indonesia. This research was conducted in cooperation with Institute for Global Environmental Strategies (IGES) Japan as part of research carried out in Asia Pacific level.

15.6 SUMMARY

The term "Environment Tourism" is involving travel to areas of natural or ecological interest, typically under the guidance of a naturalist, for the purpose of observing wildlife and learning about the environment. In this regard, ecotourism supports the concept of environment tourism. The term "ecotourism" means that type of tourism which is designed to contribute to the protection of the environment or at least minimize damage to it, often involving travel to areas of natural interest in developing countries or participation in environmental projects. It involves tourism to those places having unspoiled natural resources. It is used as a toll to exotic or threatened ecosystems to observe wildlife or to help preserve nature. Ecotourism can also be called as environment friendly tourism.

Ecotourism is a form of tourism that involves visiting natural areas—in the remote wilderness or rural environments. According to the definition and principles of ecotourism established by The International Ecotourism Society (TIES) in 1990, ecotourism is "Responsible travel to natural areas that conserves the environment and improves the well-being of local people." (TIES, 1990). Martha Honey, expands on the TIES definition by describing the seven characteristics of ecotourism, which are involves travel to natural destinations, minimizes impact, builds environmental awareness, provides direct financial benefits for conservation, provides financial benefits and empowerment for local people, respects local culture and supports human rights and democratic movements.

The Voluntary Organizations Ecotourism Associations working in promotion of Environment Friendly Tourism are Tourism Industry Association (TIA) of New Zealand which is the largest representative body of tourism operators in New Zealand. It is a membership-based and private sector trade organisation with about 1500 members who collectively make up 85% of the country's tourism turnover.

Ecotourism Kenya (EK) formerly known as Ecotourism Society of Kenya (ESOK), is a civil society organization that was established in 1996. Founded with enormous support from the tourism industry in Kenya, it plays a key role in ensuring that Kenya's tourism is sustainable, both in terms of concern for the environment and for the welfare of local communities and Indonesia Ecotourism Network which is a non-profit organization focusing its activities in developing and promoting ecotourism in Indonesia.

Established in 1995, Indecon have facilitated some various ecotourism stakeholders in ecotourism development in Indonesia. Skillful staff and professional associates have supported Indecon's works. Several innovations in development process and policy have also been identified during Indecon's involvement in promoting sustainable tourism in Indonesia. The main objective of IEN is Conservation and Community Participation through Ecotourism.

15.7 EXPECTED QUESTIONS

1. What do you understand by the term environment friendly tourism?
2. Explain the concept of ecotourism?
3. Describe the various steps to promote the concept of sustainability for environment friendly tourism?
4. Write an essay on the role and contribution of voluntary organizations in conservation and promotion of environment friendly tourism?

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UNIT 16: PLACE OF ECOLOGY AND ENVIRONMENT IN TOURISM POLICY OF INDIA – A CRITICAL REVIEW

STRUCTURE:

16.1   Introduction

16.2   Objectives

16.3   Ecology and Environment in India

16.4   Tourism Policy of India

16.5   Place of Ecology and Environment in Tourism Policy of India

16.6   Summary

16.7   Expected Questions

16.8   References

16.1 INTRODUCTION

India endowed with vast natural wealth and human resources, tourism acquires a place of special importance. However, one should not turn a blind eye to ecological and environmental changes brought about by the increasing tourist traffic. Tourism is normally seen as a money minting industry. With the kind of growth rate and the income generation abilities, it assumes a particular significance in India. In the absence of a trade surplus or a sound foreign exchange reserve, tourism is making a phenomenal though unplanned growth. But the returns of tourism should not obscure the long-term impacts of this smokeless industry on the local environment. In this unit, we will know and understand the Indian treasure of ecology and environment as tourism resources.

After that, a brief discussion will be given on tourism policy in India where the tourism development in India will also discuss. This helps to know step by step the progress of tourism in India. Then, the steps taken by Ministry of Tourism, Govt. of India will be discussed regarding the environment and nature tourism. The promotion of tourism India is designed in such a way so that it is also helpful towards the sustainability for all the fragile regions.

16.2 OBJECTIVES

After reading this unit the learner will be able to:
- To know the ecology and environment in India
- To understand the tourism policy of India
- To critically review the place of Ecology and Environment in Tourism Policy of India

16.3 ECOLOGY AND ENVIRONMENT IN INDIA

The study of ecology and environmental science has assumed great significance, particularly during the second half of the 20th century. While ecology deals with the study of structure and function of nature, environmental science with somewhat vague boundaries, is primarily concerned with how humanity affects and in turn is affected by other living organisms and the non-living physical environment.

Environmental science has to be strongly biocentric; the holocoenotic environment is the object and ecology is the science that deals with it. Ecology therefore must be at the core of any environmental science programme. Ecology provides the most scientific approach and methodology to understand and evaluate the present day environmental crisis, and to find ways and means to resolve the crisis so as to ensure a better tomorrow for the human race.

Environment may be broadly understood to mean our surroundings. It can be divided into non-living and living components. The Environment provides resources which support life on the earth and which also help in the growth of a relationship of interchange between living organisms and the environment in which they live. It is important to realise that humans enjoy a unique position in nature due to their exceptional ability to influence and mould the environment. In the recent past the term nature has been used as parallel to word environment. It has been generally believed that nature is what man has not made. Raymond Williams defines nature as 'the material world itself, taken as including or not including human beings.' Tracing the history of the term he suggests that 'nature' has meant the 'countryside', the unspoiled places', plants and creatures other than man.

Resolution of burgeoning environmental problems is not possible without a thorough understanding of ecological principles, and therefore appropriately trained ecologists (both generalists and specialists) will be required increasingly. The new generation of ecologists will require the capability to predict, plan and manage the environment and resources.

From a small beginning, ecology has emerged into a frontline science by the turn of the 20th century. From the conventional regional floristic and vegetation studies the switch over to ecosystem approach in the late fifties and early sixties, the concerted worldwide productivity studies under UNESCO's International Biological Programme (1964–74) and then incorporation of 'man' as part of biosphere in UNESCO's Man and the Biosphere (MAB) Programme followed by inclusion of geosphere also in the International Geosphere Biosphere programme, have shaped ecological researches to a great extent. Widespread environmental degradation and catastrophic episodes have generated serious concerns and environment-friendly growth in agriculture, forestry, urban and industrial systems by holistic management methods

An Indian perspective of ecology and environment:

India is the seventh largest country in the world occupying 2.4 percent of the world area. However, only 1.8 percent of forests cover lies in India. Inspite of recent efforts to increase forest cover through reforestation, being carried out mainly under Compensatory Afforestation Management and Planning Authority (CAMPA), India's forests are in a devastated condition, with just over 21 percent of India under forest cover in 2007. Dense forests cover only 12 percent of land. The policy requirement is that the forest cover should be 33 percent of the area of the country, and all of this should be closed forest. However, we are far from achieving this figure.

Forests in India are under immense pressure today and are reducing at an alarming rate due to the rapid population explosion of human and livestock, over-utilization and exploitation of forest resources, conversion of forest land for non-forestry purposes, expansion of agriculture and other illegal activities such as illegal logging, poaching and unauthorized occupation of forest land.

"Systematic management of forests began in the mid-nineteenth century. The first forest policy of India enunciated in 1894 focused on commercial exploitation of timber and gave importance to permanent cultivation. The 1952 revision of the policy recognized the protective role of forests and proposed that one-third of the land area of the country be retained under forest and tree cover. The Forest policy of 1988 focused on environmental stability and maintenance of ecological balance."

Until before 1976, forest and wildlife were State subjects in the Indian Constitution. The forest departments regulated forests in accordance with the Forest Act of 1927. Recognizing the significance of

forests and wildlife, the 42nd Amendment to the Constitution deleted both from the State list and placed them in the Concurrent list, bringing them under the purview of both the Central and State governments. Now, Centre and States may legislate on issues pertaining to forests and protection of wildlife.

- The important forest legislations in India are The Indian Forest Act, 1927, The Wildlife Protection Act, 1972,
- The Forest Conservation Act, 1980 and
- The Scheduled Tribes and other Traditional Forest Dwellers Act, 2006.

16.4 TOURISM POLICY OF INDIA

Tourism Development in India: In the early days of independent India, quite rationally, the Government didn't pay much attention to tourism. Worldwide, the number of international tourists was still limited and among those tourists there were only few who considered going to faraway places like India. Moreover, the Indian Government had more urgent matters at hand. The first public milestone in the history of tourism was the creation of the Indian Tourism Development Corporation (ITDC), in 1966. This federal organization was meant to develop tourist infrastructure and services.

On a state level, similar Corporations were established, albeit reluctantly and after considerable delay. Their budgets were small and the scales of their operations were limited. Moreover the tourist services they offered were generally considered substandard and indifferent.

Both the TDCs (the ITDC especially) and private entrepreneurs set up luxury hotels in the metropolitan, international entry and exit points. These hotels accommodated foreign visitors as well as the local elite, who patronized such hotels throughout the year. In some regional tourist centers in the vicinity of main entry points (e.g. Jaipur and Agra) such hotels were established relatively early on as well. Most of the present Indian tourist destinations, however, were developed through a slow process which started with the arrival of rather 'adventurous' backpacker tourists and their interaction with local communities.

The gradual, 'spontaneous' proliferation of various kinds of tourist services along the backpacker trail has opened up areas for tourists and paved the way for other forms of tourism development.

The local populations involved in opening up their towns and villages showed great adaptation and flexibility in identifying and trying

ways of catering to the needs and tastes of (foreign) visitors. In collaboration with these visitors, they created enclaves which were more exotic than India and yet produced exactly the right mixture of goods and services from home: peculiar places which are both island like and thoroughly Indian.

In their efforts they were neither supported nor guided by the Indian Government. Tourism development was a largely unplanned exercise. This held true for different states to different degrees. In Kerala, Jammu and Kashmir, Goa and Himachal Pradesh tourism was much more consistently incorporated into state (five year) plans than in other states, even relatively early on in the 1970s. At that time, these states already attracted a relatively large share of India's international tourists and were to become India's main tourist states and 'models for tourism development'. Still, even in these states, tourism was largely left to the private sector and to a comparatively unrestricted market. While there have been slight modifications in policy, this basic condition hasn't changed much until the present day. Following are the points related to tourism development in India:

Tourism development in India has passed through many phases.

- At Government level the development of tourist facilities was taken up in a planned manner in 1956 coinciding with the Second Five Year Plan (1956-1961).
- The approach has evolved from isolated planning of single unit facilities in the Second and Third Five Year Plans (1961-1966).
- The Sixth Plan (1980-1985) marked the beginning of a new era when tourism began to be considered a major instrument for social integration and economic development.
- But it was only after the 1980's that tourism activity gained momentum. The Government took several significant steps.
- A National Policy on tourism was announced in 1982. Later in 1988, the National Committee on Tourism formulated a comprehensive plan for achieving a sustainable growth in tourism.
- In 1992, a National Action Plan was prepared and in 1996 the National Strategy for Promotion of Tourism was drafted.
- In 1997, a draft new tourism policy in tune with the economic policies of the Government and the trends in tourism development was published for public debate.

- The policy recognizes the roles of Central and State governments, public sector undertakings and the private sector in the development of tourism.
- The need for involvement of Panchayati Raj institutions, local bodies, non-governmental organizations and the local youth in the creation of tourism facilities has also been recognized.

11th Five year plan (2007 - 2012) strategies for tourism:

- Positioning and maintaining tourism development as a national priority.
- Enhancing and maintaining India's competitiveness as a tourism destination.
- Improving and expanding product development.
- Creating world class infrastructure.
- Drawing up effective marketing plans and programmes.
- Developing human resources and capacity building of service providers.

12th Five year plan (2012 - 2017) strategies for tourism:

- Tourism activities used for poverty reduction / pro-poor tourism.
- Focus on the development of clusters / circuits based tourism.
- Developing formal and informal links between all stakeholders & coordination across all levels of Government.
- Developing tourism from people's perspective by involving local Panchayats and local communities at various stages.

Tourism Policy of India and its consequences:

In 1982, the Indian Government presented its first tourism policy. In retrospect one could argue that the novely of the subject, its low priority and the belief in its potential as a social engineering tool (in keeping with Indian public ideology at that time), contributed to a rather simplistic piece of work. It took the government until 2002 to present an updated policy document. Those expecting a clear line of thinking and plan must have been quite disappointed by the new policy. It is based on a number of incompatible perspectives, of which those of the international development community and the international lobby group of tourism and travel related industries (the WTTC) are the most pronounced.

As a result, it starts from the idea that tourism is both a threat and an engine of growth.

The first significant policy initiatives were forged in the early 1980s. With the prospect of hosting the Asian Games of 1982, the Indian Government had to start thinking about accommodating, transporting and entertaining the large number of visitors attracted by the event. This awakened a serious public interest in tourism, which was enhanced by the fact that tourism was India's largest net earner of foreign currency.

The public interest was translated into the Tourism Policy of 1982 which provided an action plan based on the development of so called tourism circuits. A tourist circuit consists of a number of tourist sights which are geographically and / or thematically grouped together with the idea that the value of their sum is more than an adding up of the values of the parts. Rather than being the result of an in-depth analysis and marketing study, the circuit idea was born out of the feeling that 'the Golden Triangle' destinations of Delhi – Jaipur – Agra and the Bombay – Goa shopping – and – beach circuit were grossly oversold. In order to lure away the tourists from these overcrowded 'circuits', into the myriad of other potentially popular destinations in India, the concept of alternative circuits – rather than alternative places that could be grouped together by tourists themselves – was somehow thought imperative.

The jargon and the ideas behind the tourist circuits of the 1980s are remarkably similar to those put forward in the context of the rural tourism proposals of the new millennium and the present national Tourism Policy: tourism was regarded as a development tool. In concrete terms the circuit concept was centered on the establishment of so – called contels (condominium hotels) in undeveloped and possibly 'backward' villages and hamlets. Such contels, including the necessary tourist infrastructure, were to be constructed by the government.

The increase in tourism arrivals was aided by the growing popularity of far - off and exotic destinations among Western tourists and recent advances in the general outlook and international image of India. The opening of its markets in the early 1990s and the recent years of high economic growth have profoundly changed its surface. In the past India was naturally associated with slums and poverty. Nowadays it is often portrayed as a rapidly emerging economic superpower. The rising economic significance and potential of tourism has gone hand in hand with a growing public interest in the sector. With the opening up of the Indian market, a lively competition between the states emerged in attracting investors in industry and other sectors. Along similar lines, states started competing for their share of international and domestic tourists.

Particularly in the traditional tourist states there was an urge to develop tourism to its full potential. A notable example is Kerala, a relatively small state with a rich variety of natural tourist settings. The Kerala government took up a largely enabling role, supporting and promoting a great number of different tourist activities.

In the new millennium, Kerala witnessed a remarkable diversification in the supply of tourist services. As never before, the government allowed tourists to move around in rather secluded areas of natural parks and sanctuaries. Private entrepreneurs pioneered 'heritage tourism', combining stays in nicely situated heritage buildings with Ayurvedic treatment. They also started organizing expeditions by foot, boat, raft, jeep or bullock cart, through the hills of the Western Ghats and along the backwaters.

Varied packages including nature, local tradition and culture, heritage and relaxation were developed by a rapidly increasing number of entrepreneurs. Inevitably, with the widespread discovery of their potential, all such bits of special tourism have spread over other parts of India and have become ordinary fare in Kerala. During this process both the government and the private sector have adopted several forms of 'ecotourism'. Such adoption was promoted by the aforementioned 1997 Action Plan. In practice, it was largely opportunistic. Everything with a more or less natural feel to it was termed 'eco'. The governments of other states increasingly follow Kerala's example. They do so by:

- recognizing the income earning and job generation potential of tourism;
- (more) actively promoting tourism through publicity campaigns and giving support and incentives to the private sector; and
- Largely putting private entrepreneurs in charge of the provision of tourist services.

The example of Kerala shows that Indian tourist destinations can outgrow the phase of basic backpacker enclaves referred to above and offer a more differentiated mix of products to a socio-economically much more varied group of tourists. Amongst these tourists, there is a large section of people from India, i.e. domestic tourists. The importance of domestic tourism was recognized by public policy makers in the 1990s. They included it as an important issue in the Tourism Action Plan of 1997 and decided that it was a state government (policy) issue. The central government was to take care of international tourists. Traditionally, domestic tourism mainly concerned pilgrimage and work-related travel.

From the 1990s onwards there has been a steep rise in modern forms of domestic tourism. This new phenomenon is related to the booming Indian economy and the new susceptibility of the Indian middle and higher classes to rather alien, Western ideas of Holiday making. At present, an ever growing group of Indian tourists travels around the country for rather prosaic, leisure and sightseeing - related reasons. This new trend is underscored by the emergence of Indian travel magazines and the growing explicit attention for domestic tourist destinations in leading newspapers.

In 2002, when the action plan was finally translated into a tourism policy. Tourism policy officially became a joint central - state government concern. The new policy itself, however, was designed by the central government. To a large extent, it concerns old wine in new bottles. It holds the kind of goals and expectations exemplary for the first policy. To start with, the policy document attempts to establish tourism's great contribution to national development and its role as an engine of growth. It suggests that tourism not only generates government revenue, foreign currency, but also provides an optimal use of India's scarce resources, sustainable development, high quality employment (especially to youngsters, women and disabled people), and finally, peace, understanding, national unity and stability. The policy starts from the idea that tourism can be used as a development tool, e.g. that it can generate high quality, mass employment and prosperity among vulnerable groups in backward areas.

In more practical terms, the policy aims at increasing the number of domestic and international tourists. In order to do this, the government proposes to diversify the Indian tourism product and substantially improve the quality of (tourism) infrastructure, marketing, visa arrangements and air-travel. The aforementioned tourism – as – a – development – tool largely concerns domestic tourism, which in this capacity is conceptually linked to 'sustainable' rural development. As far as international tourism is concerned the Indian Government mainly wants to target the 'high-yielding variety' of tourists. These major policy aims are derived from three main sources. The idea of tourism – as – a – development - tool leading to sustainable rural development is rooted in traditional socialist - style Indian Government thinking. An equally important source however, is the ideology of the international development community, represented by organizations such as the UNDP.

The idea to specifically target the long haul, high yielding variety of international tourists, on the other hand, is part and parcel of the

worldview of lobby organizations representing international airline and hotel companies. The WTTC in particular has played an important role in shaping the Indian tourism policy. Its predictions and suggestions form an integral part of the policy. While it is understandable that organizations such as the WTTC and the UNDP have influenced the Indian Tourism Policy, it is surprising to see how apparently easily and without much adaptation their recommendations have become official policy. This implies that the policy is founded upon rather contrasting ideas.

The policy does not include a clear strategy, linking means and ends, as signing responsibilities and roles across government and private agencies, and setting realistic targets according to a list of prioritized goals. Rather, it seems an expression of intent to improve on everything. The policy document itself reads like a tourist brochure, piling up a great variety of tourist activities and sights that could and should be developed (it includes a 4 page list of all forms of tourism one can possibly think of. The same goes for the 'world class infrastructure ' (including 'integrated' tourist circuits) through which such activities and sights are to be connected to the rest of the world.

But there is nothing like the kind of systematic approach one would normally associate with government plan and policy. An obvious complication in the Indian context, particularly with respect to the division of roles and responsibilities, is the federal system of government. While the central government is not powerless and does in fact determine policy and control most of the funds, for the implementation of its policy it is largely dependent on state governments, whose plans, policies and projects are often determined by concerns other than those formulated in national plans.

In the past, this may have been one of the reasons for assigning a 'lesser' form of tourism to the states: domestic tourism. In any case, the distinction between domestic and international tourism is another source of confusion. The new national policy starts from the largely implicit assumption that domestic and international tourism concern different market segments, with distinct products (destinations and tourist services) catering to distinct sets of demand. It nowhere makes clear, however, what these differences actually are, what it is that causes such differences and what the relationship between domestic and international tourism development is or should be.

In summary, we have a tourism policy document that conceives tourism both as a great boon and as a potential threat. In this latter

viewpoint tourism should be publicly controlled and guided in order to prevent it from degenerating into a menace. According to the first viewpoint, however, mainstream tourism, especially of the long haul, luxury variety, is highly beneficial to start with. It concerns such an important engine of growth and source of employment, that it merits only public facilitation.

16.5 PLACE OF ECOLOGY AND ENVIRONMENT IN TOURISM POLICY OF INDIA

Ministry of Tourism, Government of India formulated policies for ecology and environment conservation from time to time. The eco-tourism guidelines are as such for one example to regulate the sustainable tourism.

Tour operators operating in the fragile zones have adopted the (American Society of travel Agents) eco-practices for eco-tourism practices. These are:

- Leave only foot prints, take photographs, but do not take away from natural areas and heritage monuments.
- Encourage local culture
- Respect local traditions
- Help in the conservation efforts
- Do not buy products made of endangered plants and animals.
- Try to respect natural habitats and support those products which promote the cause of environment and protection Ecotourism Guidelines.

The basic Guidelines for achieving sustainable tourism are as follows:

- A general tourism policy incorporating sustainable tourism objectives at national regional and local level should be followed.
- Targets established for the planning, development and operation of tourism involving various government departments, public and private sector companies, community groups and experts could provide widest possible safeguards for success.
- Primary consideration should be given to the protection of natural and cultural assets.
- All tourism participants will follow ethical and sound behavioral and conservative rules regarding nature, culture, economy and community value system.
- The distribution of tourism development project should be rationed on the basis of equity.

- Public awareness of benefits tourism and how to mitigate its negative impacts should be pursued.
- Local people would be encouraged to assume leadership roles in planning and development.

In the Tourism Policy, 1982 the guidelines in Eco-tourism have attempted to achieve sustainability in tourism. It indicates that the key players in the ecotourism are Central Government and state governments, local authorities, developers, operators, visitors and local community. Each of them has to be sensitive to the environment and local traditions and follow the guidelines for successfully development of sustainable tourism.

The detailed discussion along with the critical review is as follows:

- **Eco Tourism:** The Ministry of Tourism, Govt. of India has the specific agenda to promote tourism in the country in a responsible and sustainable manner and as per this mandate promotion of ecotourism assumes larger importance.

Eco-Tourism has been broadly defined as tourism which is ecologically sustainable. The concept of ecological sustainability subsumes the environmental carrying capacity of a given area. The general principals of ecotourism guiding the initiatives of the Ministry are as under:

The local community should be involved leading to the overall economic development of the area. The likely conflicts between resource use for eco-tourism and the livelihood of local inhabitants should be identified and attempts made to minimize the same

The type and scale of eco-tourism development should be compatible with the environment and socio-cultural characteristics of the local community, and it should be planned as a part of the overall area development strategy, guided by an integrated land-use plan avoiding inter-sectoral conflicts and ensuring sectoral integration, associated with commensurate expansion of public services.

- **Tigers - Our National Beauties:** In the recent years it has been assessed that there is a growing trend towards travel to eco tourism destinations like National Parks and Wildlife Sanctuaries.

Considering this trend a series of meetings were organized by Ministry of Tourism with the stakeholders, State Governments and Ministry of Environment & Forests under the initiative "Tigers - Our National Beauties" and the stake holders had raised serious concern about growing dangers to wildlife in our National Parks and wildlife sanctuaries due to

unplanned growth of infrastructure in these areas which is also affecting the corridors for movement animals in the parks.

During these meetings, it was decided that before making any policy intervention we must have independent assessment of the ground situation in our National Parks & Wildlife Sanctuaries. In view of this, on a pilot basis, the first assessment of Hotels, Lodges, Resorts, Camps & Guest Houses in and around Corbett National Park was taken up by Ministry of Tourism considering that Corbett Reserve has the highest density of tigers in the country and is under huge biotic pressure. The Ministry of Tourism had commissionned this survey through the Students in Institute of Hotel Management, Pusa, New Delhi. Similar surveys were extended to Kaziranga National Park, Kanha National Park, Bandavgarh National Park, Pench Tiger Reserve and Mudumalai Wild LIife Sanctury. The survey of the aforesaid parks has come out with first hand information with regard to impact of tourism activity in and around the national parks and also the blocking of animal corridors.

To encourage the Stakeholders to promote & practice Ecotourism practices, the Ministry of Tourism has included categories of awards "Best Eco friendly Hotel", 'Best Responsible Tourism Project", "Best Eco friendly Practices by Tour Operators" in the National Tourism Awards presented annually to various segments of travel, tourism & hospitality sector.

• **Nature Tourism:** In search of new tourism products, travellers and suppliers are today seeking to reshape the meaning of nature as a tourism attraction. Modern nature based tourism focuses on experiencing flora and fauna in natural settings. The nature based tourism related to nature, its attractiveness so that the visitors experience it in its natural settings. Eco-tourism takes into account unspoiled natural and socio-cultural attraction. Today the term nature tourism is often used synonymously with eco-tourism. Today nature tourism is the fastest growing segment of the tourism sector. It comprises around 40-60% of all international tourism. Diversity of India is to be seen not only in its people, culture, religions, language and life style, the diversity starts in the land itself. The snowbourd peaks of the Himalayas, tropical rain forests, and hot deserts and breath-taking beautiful coasts. Each diverse geographical region generates a different picture and exploring them provides a unique experience. Now all these are packaged for tourists to provide eco-friendly holidays in India.

• **Wild Life Tourism:** The diversity of wild life in India is as rich as that of its flora and fauna. The great wealth of Indian wild-life can be imagined

with the sight of majestic elephants, the dance of peacocks, the camel strides, the roar of tigers, at unparalleled acts of beauty. Watching birds and animals in their natural habitat is an experience in itself. The vastness of wild life and wilderness is India unparallel in the world. All these account for the immense opportunities for wild life tourism in India. The immense heritage of wild life in India comprises 80 national parks and another whopping 441 wild life sanctuaries including bird sanctuaries. These reserves and forest areas are spread across the breadth and length right form the foot hills of Himalayan, the Jim Corbet National park to six national parks in Andaman, from Ranthambhor national park in Rajasthan to Hazaribag wild life sanctuary in Bihar. India also boasts of the unique ecosystem at Sunderbans which is a UNESCO world heritage site and home to the largest number of tigers in the world.

The Himalayan region is renowned for being the national habitat for a variety of wild life, elephants, snow leopards, deer, panther, wild buffalos, wild ass, one horned rhinoceros, porcupine, snow leopards, etc. The Kaziranga Game Sanctuary is ideal habitat for the rhino that the nature lovers and environmentalists are fascinated by. The great Indian bustard and the black buck of Kerera sanctuary attract a lot of tourists. The Madhav National Park (Shivpuri Park) is another rich habitat for the wild life. The royal animal, tiger happens to be symbolof strength and speed. Amongst the best-known tiger reserves in India is Bandhawgarh in Madhya Pradesh. It is also known as the crown in the wild life heritage of India.

The variety of birds in India is enormous. Several hundred species of bird can be spotted across India. Indian wild life has its share of native birds along with migratory birds. The region of Andaman is home to rare species of birds like Narcondum hornbills, Nicobar pigeons and megaspores. The Himalayan region is well known as the natural habitat for the pheasant griffon, vulture and ravens. Dudhuwa wild life reserve, Keoladeao, Ghana national park, the Bharatpur bird sanctuary in Rajasthan is home to indigenous and migratory water birds. These bird sanctuaries are attracting tourists from far and wide.

• **Fishing and Angling:** Among the amazing array of nature tours offered in India are those that offer angling and fishing. The waters of Indian sub-continent are mind-blowing grounds for the nature sports. The adventures settings range form the majestic Himalayan valleys, snow fed streams and high altitude lakes and wide coastal stretches of the Arabia Seas and Bay of Bengal. Amidst the beautiful hills of the Himalayas is

tented accommodation along the river beds, excellent option for adventure holidays in India. The Cauvery fishing lodge near Mysore, the hill stations of Munnar and streams and lakes of Kerala and Kashmir are a paradise for anglers.

• **Hill Stations:** At heights that range from 600 m to 3500m above sea level, most of the hill resorts of India are tourist destination in India. The hill stations add to the nature tour of India with majestic mountains and ravishing rivers. Mountain ranges of Shimla, Kullu Manali, Dalhousie, Palampur in Himachal Pradesh, Nainital-Almora-Kausani in Kumaon hills of Uttar Pradesh, Pachmarhi in MadhyaPradesh, Darjeeling are important for their snow-dusted peaks, lakes, parks and hot springs. The waterfalls, sulphur bath and all provide such an experience, which will linger in one's mind.

Green heavens are on not only in the forest but the Islands are also a source of the best eco-tourism destinations. The tourism activities in Lakshadweep bring you close to nature. Andamans that are covered with rainforest, ringed by coral reefs, marine life, swimming and sunbathing are good experiences.

We are promoting tourism but while promoting tourism in eco-sensitive areas the emphasis is to control the volume of tourists so that the fragile balance of the area is not disturbed. The whole objective of nature tourism is to have purposeful travel to natural areas. Taking special note of this very objective of the eco-tourism while utilising the economic opportunities we should ensure conservation of natural resources. People travel to those areas, which enlightens, educates and entertains them. The new changed concept of nature tourism revives the tired source of the eco-tourism. It also provides basic economic upliftment to local people and other stakeholder.

16.6 SUMMARY

Environment may be broadly understood to mean our surroundings. It can be divided into non-living and living components. The Environment provides resources which support life on the earth and which also help in the growth of a relationship of interchange between living organisms and the environment in which they live. It is important to realise that humans enjoy a unique position in nature due to their exceptional ability to influence and mould the environment.

In the recent past the term nature has been used as parallel to word environment. It has been generally believed that nature is what man

has not made. Raymond Williams defines nature as 'the material world itself, taken as including or not including human beings.' Tracing the history of the term he suggests that 'nature' has meant the 'countryside', the unspoiled places', plants and creatures other than man.

India is the seventh largest country in the world occupying 2.4 percent of the world area. However, only 1.8 percent of forests cover lies in India. Inspite of recent efforts to increase forest cover through reforestation, being carried out mainly under Compensatory Afforestation Management and Planning Authority (CAMPA), India's forests are in a devastated condition, with just over 21 percent of India under forest cover in 2007. Dense forests cover only 12 percent of land.

The policy requirement is that the forest cover should be 33 percent of the area of the country, and all of this should be closed forest. However, we are far from achieving this figure. Worldwide, the number of international tourists was still limited and among those tourists there were only few who considered going to faraway places like India. Moreover, the Indian Government had more urgent matters at hand. The first public milestone in the history of tourism was the creation of the Indian Tourism Development Corporation (ITDC), in 1966. This federal organization was meant to develop tourist infrastructure and services. In the early days of independent India, quite rationally, the Government didn't pay much attention to tourism.

In 1982, the Indian Government presented its first tourism policy. In retrospect one could argue that the novely of the subject, its low priority and the belief in its potential as a social engineering tool (in keeping with Indian public ideology at that time), contributed to a rather simplistic piece of work. It took the government until 2002 to present an updated policy document. Those expecting a clear line of thinking and plan must have been quite disappointed by the new policy. It is based on a number of incompatible perspectives, of which those of the international development community and the international lobby group of tourism and travel related industries (the WTTC) are the most pronounced.

As a result, it starts from the idea that tourism is both a threat and an engine of growth. In 2002, when the action plan was finally translated into a tourism policy. Tourism policy officially became a joint central - state government concern. The new policy itself, however, was designed by the central government. To a large extent, it concerns old wine in new bottles. It holds the kind of goals and expectations exemplary for the first policy. To start with, the policy document attempts to establish tourism's great

contribution to national development and its role as an engine of growth. It suggests that tourism not only generates government revenue, foreign currency, but also provides an optimal use of India's scarce resources, sustainable development, high quality employment (especially to youngsters, women and disabled people), and finally, peace, understanding, national unity and stability. The policy starts from the idea that tourism can be used as a development tool, e.g. that it can generate high quality, mass employment and prosperity among vulnerable groups in backward areas.

Ministry of Tourism, Government of India formulated policies for ecology and environment conservation from time to time. The eco-tourism guidelines are as such for one example to regulate the sustainable tourism. Tour operators operating in the fragile zones have adopted the (American Society of travel Agents) eco-practices for eco-tourism practices. These are leave only foot prints, take photographs, but do not take away from natural areas and heritage monuments, encourage local culture, respect local traditions, help in the conservation efforts, do not buy products made of endangered plants and animals and try to respect natural habitats and support those products which promote the cause of environment and protection Ecotourism Guidelines.

The basic Guidelines for achieving sustainable tourism are a general tourism policy incorporating sustainable tourism objectives at national regional and local level should be followed, targets established for the planning, development and operation of tourism involving various government departments, public and private sector companies, community groups and experts could provide widest possible safeguards for success, primary consideration should be given to the protection of natural and cultural assets, all tourism participants will follow ethical and sound behavioral and conservative rules regarding nature, culture, economy and community value system, the distribution of tourism development project should be rationed on the basis of equity, public awareness of benefits tourism and how to mitigate its negative impacts should be pursued and local people would be encouraged to assume leadership roles in planning and development.

In the Tourism Policy, 1982 the guidelines in Eco-tourism have attempted to achieve sustainability in tourism. It indicates that the key players in the ecotourism are Central Government and state governments, local authorities, developers, operators, visitors and local community. Each of them has to be sensitive to the environment and local traditions

and follow the guidelines for successfully development of sustainable tourism.

16.7 EXPECTED QUESTIONS

1. What do you understand the term ecology and environment?
2. Write an Indian perspective of ecology and environment?
3. Describe the phase wise development of tourism in India?
4. Write an essay on tourism policy of India and its consequences?
5. Critically explain the importance of ecology and environment in tourism policy of India?

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