

Disaster Management

A *disaster* is defined as a sudden event or calamity that causes large-scale damage and destruction of human life and property.

❑ Natural Disasters

- Air-related – Hurricanes, cyclones, storms, etc.
- Water-related – Floods, drought, etc.
- Earth-related – Earthquakes, landslides, volcanic eruptions, etc.

❑ Man-made Disasters

- Industrial accidents
- Wars, riots, terrorism, etc.
- Toxic spills
- Transportation accidents

Earthquake

The term *earthquake* is used to describe any seismic event, caused naturally or as a consequence of human activities, that leads to the generation of devastating seismic waves.

❑ Causes of Earthquake

- Movement of hot gases and magma
- Volcanic activities
- Stress buildup due to water pressure
- Tectonic stress generated by movement of tectonic plates

❑ Effects of Earthquake

- Large-scale damage to life and property
- Destruction and demolition of buildings, dams, etc.
- Increased incidence of fire, landslides, etc.
- Increased incidence of *tsunami* waves, leading to inundation in coastal areas



Continue...

❑ **Management of Earthquakes**

- Marking earthquake-sensitive areas
- Construction of houses, factories, dams, bridges, etc., with appropriate design and materials and strategically placed vibration absorbers
- Forecast and early prediction of earthquakes
- Creating public awareness regarding the steps to be taken during emergencies
- Relief measures through timely support by individuals, government, and non-governmental organizations

Landslides

Landslides are natural phenomena during which large amounts of landmass slide downwards from hilly areas, mainly because of gravity, destroying everything lying in the path.

❑ Causes of Landslides

- Earthquakes
- Heavy rain and Glaciers
- Construction of dams, bridges, tunnels, roads, etc
- Use of explosives for breaking rocks during mining
- Deforestation of mountain slopes

Effects of Landslides

- Rocks, large debris, and sliding landmasses destroy urban and rural habitation
- Damage to roads, dams, bridges, etc.
- Obstruction of river flow increasing the incidence of flood
- Severe damage to crops and agricultural lands

Management of Landslides

- Construction activities should be done only after properly evaluating the geological and geographic conditions.
- Regulating rate of water flow also helps in controlling landslides.
- Agriculture at slopes should be avoided as far as possible.
- Relief task through economic help supporting resettlement and rehabilitation of affected people at individual, community, and organizational levels should be carried out.

Floods

The accumulation of a large quantity of water at a place or the presence of more water than can be handled by the drainage of the area is known as *flood*.

❑ Types of Floods

- Flash flood: Sudden heavy rain fall
- River flood: Rain over large catchment area
- Coastal flood: cyclonic activity like hurricanes, tropical cyclones

❑ Effects of Floods

- Damage to agricultural crops
- Damage to life and property
- Disturbances in transportation
- Increase in populations of disease vectors and pathogens
- Loss of biodiversity
- Economic crisis q1925



Continue...

❑ Causes of Floods

- Deforestation
- Urbanization
- Change in river course
- Riparian dams
- Control flood in one area may increase the Risk of flood in another area
- Man-made impediments in river channels
- Uncertain rainfall



❑ Management

- Plantation on slopes
- Drainage management
- Flood plain zoning
- Forecasting

Cyclones

In northern hemisphere, a cyclone refers to an area of low atmospheric pressure surrounded by a wind system in a counter-clockwise direction.

❑ Effects of Cyclones

- Cyclones generate storm surges.
- They damage installations, dwellings, communication systems
- Resulting in loss of life and property.
- They may cause river floods and submergence of low-lying areas.
- They pollute drinking water sources causing outbreak of epidemics.



❑ Management of Cyclones

- ✓ Forecasting
- ✓ Proper construction of houses
- ✓ Relief tasks
- ✓ Development of warning systems
- ✓ Construction of cyclone shelters in the cyclone-prone areas Q1925_1610
- ✓ Community preparedness at all levels to deal with emergency situations

Disaster Management

Objectives:

- Reduce, or avoid, losses from disasters
- Assure prompt assistance to victims
- Achieve rapid and effective recovery

Disaster management:

- Mitigation: Minimizing the possible effects of a disaster
(**Planning for construction of building, planning for location of industry, Vaccination against epidemic**)
- Preparedness: Planning how to respond to a disaster
(**Conducting emergency exercise, prepare evacuation plans**)
- Response: Taking immediate measures to save life and property, **providing medical relief, basic needs like foods + water**
- Recovery: Returning the community to normal conditions
(**Rebuilding habitat, roads, communication facilities**)

Water act 1974

- ❑ Objective- Prevent and control water pollution.
- ❑ The **Water Act** was enacted in 1974 to provide for the prevention and control of **water** pollution, and for the maintaining or restoring of wholesomeness of **water** in the country.
- ❑ It defines water pollution as contamination of water, alteration of it's physical, chemical, biological properties,
- ❑ Discharge of any substance into water which may render such water harmful to public health, Commercial, industrial, agricultural, or others legitimate uses.
- ❑ It establishes standards for water quality.
- ❑ Industries must seek permission from pollution control board to discharge waste into water.

Forest conservation act of 1980

- ❑ Objective- Protection and conservation of forest.
- ❑ The act specifies the requirements those should be met before declaring an area as protected forest.
- ❑ Under the act, the govt. may regulate in any forest the clearing of land for cultivation, pasturing of cattle.
- ❑ The act makes it mandatory for the owner of a forest to seek permission before converting it to any non-forest purpose.

Wildlife protection act 1972

The act along with wildlife protection act 1973 provides for the protection of birds and animals and for all matters that are connected to it.

Air Act 1981

- ❑ Objective- Prevention and control of air pollution.
- ❑ The Government passed this Act in 1981 to clean up our air by controlling pollution.
- ❑ To ensure this, Pollution Control Boards (PCBs) have been set up by Government to measure pollution levels in the atmosphere and at certain sources by testing the
- ❑ It defines air pollution as the presence of any solid/liquid/gaseous substance in such concentration that may be injurious to human
- ❑ Act lists a number of function for the pollution control board
 - Collection data on air pollution,
 - Setting air quality standard,
 - Organizing training,
 - Setting labs.

Issue involved in enforcement of law

- No dearth of laws for protection and conservation of environment but implementation of these laws are poor.
- Govt. agencies have vast power to regulate industries, but they are reluctant to use these powers.
- Govt. agencies are ready to pass environmental laws but do not provide funds for their implementation.
- Courts have responded to the complaints of citizen- forcing the govt. to act against pollution
- As a result, hundreds of factories have installed effluent treatment plants.
- It's not the law but the awareness of citizen which can save the environment.
- Religious customs

Resettlement and rehabilitation of people: its problems and concerns

Displacement is a forced migration in which the migrants or displaced persons cannot go back to their native place



Resettlement and Rehabilitation

Reasons for Displacement of Human Habitation

Natural hazards –

Earthquakes, cyclones, landslides, floods, drought, volcanic eruptions, and epidemic diseases

Anthropogenic factors –

Developmental activities such as construction of dams, roads, tunnels, etc., which increase the risks of calamities such as floods and landslides. Other factors include accumulation of wastes and environmental pollution

Problems Faced by Displaced People

- The compensation for the lost land is often not paid or the payment is delayed.
- Basic infrastructure and amenities are not provided in the new area.
- Very often, temporary camps become permanent settlements.
- Ethnic and caste differences make it difficult for the refugees to live peacefully with the communities already living in the area.

Understanding Population Patterns

Trends in human population – DEMOGRAPHY.

Population Growth

Increase in the number of individuals of human beings

Population Explosion

The rapid increase in population which outstrips the growth of national income and retards the per capita income.

2.5 billion in 1950 to 6.7 billion in 2008 8 billion by 2020. India in 2050 – 1.5 and china 1.3 billion

Birth rate – It is defined as number of births per thousand people in a geographical area. Acc. To 2007- 22.69 births per 1000 ppl in world.

Death rate – It is defined as number of deaths per thousand people in a geographical area. Acc. To 2006- 6.58 deaths per 1000 ppl.

Migration – It is defined as the rate of population change for a specific area which is also affected by the movement of people into and out of the area.

Immigrants.- to come into another country to live permanently



Causes of Population Growth

Conquest of diseases

Improvement in Public Health – 75 % safe drinking water

High infant mortality

Poverty – more children , more additional hands for work – illiterate, unskilled.

Preference for male child- family's name,

DOWRY SYSTEM – financial burden on family

Custom of early marriages – more children

Illiteracy – family planning, women education.



❑ Effects of Population Growth

Increase in population has lead to several socio-economic problems.

More deforestation activities arising to meet the requirements of fuel wood, agriculture, settlement and also for industrial establishments

Excessive exploitation of natural resources causing ecological imbalance in nature.

The indiscriminate falling of trees for agricultural expansion and timber products has lead to the degradation of watersheds affecting the water catchment areas.

Due to population pressure, water resources are exploited more for various uses including domestic, livestock and industrial use.

Population growth results in unemployment and job crisis.

Factors Affecting Variation of Population

- Age of human settlement eg USA and Australia – strict immigration policies.
- Availability of means of transport and communication
- Cultural factors (Nomadic tribes always move on from place to place, so don't make a place over populated).
- Type of soil (Deserts are less populated)
- Climatic conditions (Canada is not densely populated)
- Natural resources

Silent Valley Movement

- ❑ Silent Valley **Save Silent Valley** was a social movement aimed at the protection of Silent valley, an evergreen tropical forest in the Palakkad district of Kerala, India.
- ❑ It was started in 1973 to save the [Silent Valley Reserve Forest](#) from being flooded by a [hydroelectric](#) project
- ❑ The valley was declared as [Silent Valley National Park](#) in 1985
- ❑ Silent Valley is home to the largest population of Lion-tailed Macaque.
- ❑ They are among the World's rarest and most threatened Primates.



Convention on Biological Diversity x1901_2510

The conservation of biodiversity is a common concern of humankind.

The CBD covers biodiversity at all levels: Ecosystems, species and genetic resources.

The Convention on Biological Diversity (CBD) is an international legally-binding treaty with three main goals:

1. conservation of biodiversity
2. sustainable use of biodiversity
3. The fair and equitable sharing of the benefits arising from the use of genetic resources.

Its overall objective is to encourage actions which will lead to a sustainable future.

GANGA ACTION PLAN

- ❑ The Ganga action plan was, launched by Shri Rajeev Gandhi, the then Prime Minister of India on 14 Jan. 1986 with
- ❑ The main objective of pollution abatement, to improve the water quality by Interception, Diversion and treatment of domestic sewage and present toxic and industrial chemical wastes from identified grossly polluting units entering in to the river
- Control of non-point pollution from agricultural run off, human defecation, cattle wallowing and throwing of unburnt and half burnt bodies into the river.
- Research and Development to conserve the biotic, diversity of the river to augment its productivity.
- New technology of sewage treatment and sewage treatment through afforestation has been successfully developed.

- **Bishnoi** is a religious group found in the [Western Thar Desert](#) of India, the desert overlaps areas of [Punjab](#), and [Sindh](#) in Pakistan.
- In 1730, 363 Bishnoi men, women and children led by Amrita Devi died protecting trees from cutting by the king's men.
- This incident happened in Khejarli which is a village in Jodhpur district of Rajasthan, India 26 km south-east of the city of Jodhpur.
- The Bishnois sacrificed their lives while protecting trees by hugging to them.
- Bishnois are strong lovers of wild animals. It is because of their protection that in Bishnoi-dominated areas, [deer](#) and [antelope](#) (such as [blue bulls](#), [black bucks](#), [chinkaras](#) and [chowsinghas](#)) are seen grazing in their fields despite the fact that the state of Rajasthan where the Bishnois mainly live, faces severe water shortages.

Kyoto Protocol

The Kyoto Protocol to the United Nations Framework Convention on climate change is an amendment to the international treaty on climate change:

It assigns mandatory emission limitations for the reduction of green house gas emission to the signatory nations.

The objective of Protocol is “Stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climatic system”

Montreal Protocol

Designed to protect the ozone layer by phasing out the production of a number of substances believed to be responsible for ozone depletion

Tribal population and rights in India

India's forests are home to cores of people, including many Scheduled Tribes, who live in or near the forest areas of the country.

Nearly 250 million people live in and around forests in India, of which the estimated indigenous Adivasi or tribal population stands at about 100 million.



Environmental Ethics

Creating a moral sense of environmental conservation in each person is called *environmental ethics*.



Environmental ethics:Issues. The Contrasting Views

- Utilitarian justification (also known as individualistic ethics)
- Ecological justification (also known as moral justification)

Environmental Equity and Priority Principle

Always respect all nature especially in cases where strong human rights are at stake

Environmental ethics: Possible Solutions

- One should respect the power of environment and apply it for the benefits of humankind.
- One should place the highest priority on health, safety, and environmental protection while using environmental products.
- One should be sensitive to ethical and social issues regarding the environment.

Methods to generate public awareness

The methods to generate environmental awareness generally falls in two categories :

Formal Method

Introduction of Environmental Studies as a course in schools and colleges

Non Formal Method

- Mass media such as newspapers, magazine, radio, T.V., etc
- Organizing meetings, seminars and conferences
- Organizing various competitions
- Through folk songs, street plays, TV serials, etc.

Environmental movements

BISHNOI MOVEMENT :

it was started in 400 years ago by a Sage known as **Sombaji. in Rajasthan**, a large number of trees are still worshiped by devotees. people resisted the cutting of such tree & advocated movement **against deforestation**.

CHIPKO MOVEMENT :

It was started in 1973 is the **Chamoli district of Uttranchal**, Chipko movement was **against deforestation**. Sunderlal Bahuguna , Gauri devi & Chandi Prasad Bhatt were prominent leaders of this movement.

NARMADA BACHAO ANDOLAN :

it is a movement against building multi-purpose dam over Narmada river which will ultimately result in flood & water logging in large area covered by about 1,00,000 people. the movement is led by Medha Potekar, Baba Amte & Arundhati Roy.

SILENT VALLEY MOVEMENT :

it was a movement against a hydro-electric project on the river Kuthipuzha, tributary at Preiyar river. in fact, the project site is covered by evergreen forest which is a home of many rare species of plants & fauna which may be destroyed by submergence.

BALIYAPAL MOVEMENT :

<http://sathitech.blogspot.in/2009/09/environment-movements-in-india.html>

It is a movement against testing of missiles on the land of Baliyal villagers which may lead to interfertility of soil.