# CLIMATE CHANGE

**Introduction:** Climate changes means changes in the ordinary weather which found at a particular place for a period of time such as the usual weather, changes in winter season and spells, rainfall in rainy season, changes in summer season and spells, etc. at a particular place.

**Causes of Climate Change**

- ❖ **Natural Causes**
- Volcanic eruption
- Ocean
- Earth Orbital Changes
- Solar Variation
- ❖ **Human Causes**
- Green house gases
- Deforestation
- Coal Mining
- Burning of fossil fuels.

**Impacts of Climate Change**

- ❖ **Agriculture**
- Agriculture is responsible for approximately 1/3rd of climate change. Approximately 25% of carbon dioxide emissions, are produced by agricultural sources, mainly deforestation. The use of fossil fuel based fertilizer and the burning of biomass.
- ❖ **Global Temperature Rise**
- During last 115 years, global average surface air temperature has increased about
- 1.8°F (1°C) globally. This change has been attributed largely to emissions of carbon dioxide and other emission such as national Aeronautics and space administration (NASA)
- ❖ **Shrinking Snow Sheets**
- Climate change leading to global warming has further led to shrinking of ice sheets. A pure national Aeronautics and space administration, ice mass in Greenland and Antractic ice sheets has decreased.
- ❖ **Glacier Retreat**
- One of the adverse impact of climate change is the retreat of glacier across the globe such as Himalayas, Alaska, Andes, etc. It is claimed that after 1984 Alaska glaciers have lost mass. Where every subsequent year has shower ice mass less than the proceeding year.
- ❖ **Other Effects**
- Climate change has affected pattern of winds, patterns of precipitation and ocean circulation. Due to this oxygen concentration at intermediate depth in oceans have show a major deadline.

# GLOBAL WARMING

- Global warming is a gradual increase in the earths average surface temperature over an extended period. It is a key aspect of the broader phenomenon of climate change, which includes shifts in weather patterns and other environmental disruptions.

## Causes of Global Warming

- Deforestation
- Fertilizers
- Fossil fuel burning, power plant
- Burning gasoline for transportation
- Animal and Agriculture.
- Overpopulation
- Forest Blazes or forest fires

# HEAT WAVE

- Heat wave is a condition of air temperature which becomes fatal to human body when exposed to heat. It is based on the temperature thresholds over a region in terms of actual temperature or its departure from normal. It is also defined in term of the heat index based on temperature and humidity or based on extreme percentile of the temperatures. Heat wave is basically a period of abnormally hot weather generally lasting for more the two days.

## Health Impacts of Heat Waves

- The health impacts of heat waves typically involve dehydration, heat cramps, heat exhaustion and/or heat stroke. The signs and symptoms are as follows:
- **Heat cramps:** Edema (swelling) and Syncope (Fainting) generally accompanied by fever below 39°C i.e., 102°F.
- **Heat exhaustion:** Fatigue, weakness, dizziness, headache, nausea, vomiting, muscle cramps and sweating.
- **Heat stroke:** Body temperatures of 40°C i.e. 104°F or more along with delirium, seizures or coma. This is a potential fatal condition.

## Measures Taken to Minimize the Impact During the Heat Wave:

- Avoid going out in the sun, especially between 12.00 noon and 3.00 p.m.
- Drink sufficient water and as often as possible, even if not thirsty.
- Wear lightweight, light-colored, loose, and porous cotton clothes. Use protective goggles, umbrella/hat, shoes or chappals while going out in sun.
- Avoid strenuous activities when the outside temperature is high. Avoid working outside between 12 noon and 3 p.m.
- Avoid alcohol, tea, coffee and carbonated soft drinks, which dehydrates the body.
- Avoid high-protein food and do not eat stale food.

- If you work outside, use a hat or an umbrella and also use a damp cloth on your head, neck, face and limbs.
- Do not leave children or pets in parked vehicles.
- If you feel faint or ill, see a doctor immediately.
- Use ORS, homemade drinks like lassi, torani (rice water), lemon water, buttermilk, etc. which helps to re-hydrate the body.

# HEAT STROKE

**Definition: Heat stroke** is a **serious and potentially life-threatening condition** caused by the **body overheating**, usually due to prolonged exposure to high temperatures and/or physical exertion in hot weather.

## Normal Body Temperature:

- Around **37°C (98.6°F)**
- In heat stroke, body temperature may rise to **40°C (104°F)** or higher

## Causes of Heat stroke:

- Prolonged exposure to hot weather
- Heavy physical activity in heat
- Dehydration
- Wearing heavy or dark clothing
- Lack of ventilation or shade

## Symptoms:

- High body temperature (above 40°C)
- Hot, dry skin (no sweating)
- Confusion or disorientation
- Rapid heartbeat
- Headache
- Dizziness or fainting
- Nausea or vomiting
- Muscle cramps or weakness
- Seizures (in severe cases)

## First Aid:

- **Call emergency services immediately (**108 and 102 for Ambulance for emergency medical services)
- Move the person to a **cool, shaded place**
- Remove excess clothing
- Cool the person using:
- Wet cloths
- Fans
- Ice packs (on armpits, neck, groin)

- **Give cool water** only if the person is conscious

### ❖ Prevention of heat stroke:

- Stay **hydrated** (drink water often)
- Avoid outdoor activities during peak heat (11 AM – 4 PM)
- Wear **lightweight, loose, and light-colored clothes**
- Use hats, sunglasses, and sunscreen
- Take breaks in the shade or cool areas
- Be cautious if you are elderly, very young, or have health conditions

## Acid Rain

- Acid Rain occurs when contaminants in the atmosphere, such as nitrogen oxides and Sulphur oxides, combine with precipitation and fall with the rain. There are two types of acid deposition namely: wet deposition and dry deposition.

**Impact of Acid Rain**

- Impact on Soil
- Impact on Wildlife
- Impact on Humans
- Damages Buildings

**Measures to Control Acid Rain**

- Reducing the Amount of Sulphur Dioxide and Oxides of Nitrogen
- Cleaner Cars
- Flue Gas Desulphurization

**Ozone Layer Depletion**

- Ozone layer depletion is the gradual thinning of the earth's ozone layer in the upper atmosphere caused due to the release of chemical compounds containing gaseous bromine or chlorine from industries or other human activities.
- Ozone layer depletion is thinning of the ozone layer which is basically present in the upper atmosphere. This will happen when chlorine and bromine atoms in the atmosphere come in direct contact with ozone and will destroy the ozone molecules.

**Causes of Ozone Layer Depletion**

- Chlorofluorocarbons
- Unregulated Rocket Launches
- Nitrogenous Compounds

- Ozone Layer Depleting Substances

**Solution to Ozone Layer Depletion**

- Use of nitrous oxide should be prohibited
- Use eco friendly cleaning products
- Avoid use of ozone depleting substances (ODS)

**Wasteland and Wasteland Reclamation**

- Wasteland reclamation is defined as it is the formation of new land where there is water. Or Wasteland is also defined as a land that is unhealthy for cultivation or is unfruitful, unimproved or barren.
- It comprises of two distinct forms:
- Creating new land from sea or riverbeds
- Restoring an area to a more useful and productive form

**Methods of Wasteland Reclamation**

- Providing surface
- Mulching
- Afforestation
- Reforestation
- Changing ground topography of downhill areas

**Disadvantage of Global Warming**

- The main reason for unknown changes and effects in climate is description of Ocean Cultivation.
- Increase in sea level will cause flood in low lying lands and evaluation.
- In mediator mean climatic regions such as southern Europe, South Africa and Western Australia precipitation get reduced soil moisture levels disease and ultimately the productivity gas down.
- There is increase in Desertification.
- When there is abrupt change in weather will further affect the agriculture and results in food shortage.

**Mitigation Approaches for Global Warming**

- Energy
- Industry

- Agriculture
- Transport
- Government
- Forestry

# SUSTAINABLE DEVELOPMENT

- Development which meets the needs of the present without compromising the ability of future generations to meet their own needs' is known Sustainable Development which was given by the Brundtland Commission in its report Our Common Future (1987). Sustainable development (SD) calls for take efforts towards building an inclusive, sustainable and resilient future for people and planet.

**Core Elements of Sustainable Development**

- Environmental Sustainability
- Social Sustainability
- Economic Sustainability

## Sustainable Development Goal:

- United Nations (UN) launched the 2030 Agenda for Sustainable Development and SDGs. To bring sustainable development in the mainstream.
- This universal, integrated and transformative agenda aims to spur actions which will end poverty and build up more sustainable world over the next 15 years.
- There are total 17 goals and 169 targets. Specific targets should be achieved by 2030.
- Some action were required to reach the goals it governments, businesses, civil society and people everywhere have to play role.
- SDGs are not legally binding.

## Role of Cooperatives in Sustainable Development

- Cooperative societies are those which connect the people at the grassroots level to the highest level of the government.
- Cooperatives and NGOs will further help considerably in the upliftment of the socioeconomic
- Conditions of the rural poor and people also adopt environment-friendly technologies for their functioning and also generate awareness among people regarding environmental issues.

**URBAN PROBLEMS RELATED TO ENERGY**

- **Urban Sprawl :** Many of them is moving from rural areas to cities in search of employment. Urban growth is very fast and is difficult to accommodate all the commercial, industrial, residential and educational facilities within the limited area.
- **Energy Requirements:** Energy requirements of urban population are much higher than that of rural ones. This is because urban people have a higher standard of life due to this life style demands more energy inputs in every sphere of life.

## Energy Management

- People should be encouraged for use low energy content building materials and agricultural and industrial residues in construction. through tax incentives, subsidies and innovative venture (chance) capital schemes we can speed up commercialization of renewable energy technologies.

**WATER AND ENVIRONMENTAL ETHICS**

**Ethics**

- It is the branch of philosophy which tries to understand the nature of good life and our rights and responsibilities towards others, so that we can act on that knowledge.

**Water Ethics**

- Water ethics refers to the moral principles and values that guide our behavior and decision-making concerning water. It involves considering the ethical dimensions of water management, conservation, and distribution.

**Environmental Ethics**

- It means the normal relationship of individuals with environment. It is concerned with do's and don'ts of the individuals to the environment.

## Environmental Problem

- Pollution
- Land degradation and soil erosion
- Population growth is the root cause of current global environmental crisis.
- Water scarcity
- Deforestation activities
- Urbanization

## ACTS RELATED TO ENVIRONMENTAL PROTECTION AND PRESERVATION

An act that is provided for the protection and improvement of environment. Some decisions were taken at United Nations Conference on the Human Environment which is held at Stockholm in June 1972. India has also participated in this Conference, to take appropriate steps.

### Environment Protection Act, 1986

#### Objectives

- To protect Wildlife and forest in our Country.
- To improve the quality of life by protection of Environment
- To Coordinate the activities of various regulatory agencies already in existence.
- To appoint environment officers to check environmental pollution.

### Prevention, Control and Abatement of Environmental Pollution

- Furnishing of information to authorities and organics in certain cases.
- Powers to take sample and procedure to be followed in connection there with.
- Environmental Laboratories.
- Person carrying on industry operations, etc. not to allow emissions or discharge or environmental pollutants in excess of the standards.
- Person handling Hazardous substances to comply with procedural safeguards.

### Water Act

- The Water (Prevention and Control of Pollution) Act, 1974 is a pivotal piece of environmental legislation in India. It was the first law passed by the Indian Parliament that specifically focused on the issue of water pollution. The act was introduced for the prevention and control of water pollution and maintaining or restoring of wholesomeness of water.

The primary objectives of the Water Act, 1974 are:

- Prevention and control of water pollution
- Maintaining or restoring of wholesomenen of water
- Formation of Pollution Control Broads.

### AIR ACT:

- According to the World Health Organization, the capital city New Delhi is one of the top most polluted cities in the world. Surveys indicate that in New Delhi the incidence of respiratory disease due to air pollution is about 12 times the national average. The act Provides for the prevention, control and abatement of air pollution.

- The Government passed this Act in 1981 to clean up our air by controlling pollution. This Act also ensures controlling the level of air pollution. Accordingly, the Indian government enacted specific laws under Article 253 of the Constitution for the preservation of natural resources and the law enacted for air preservation. This act applies to Whole of India.

**The main objectives of the Act are as follows:**
To provide for the prevention, control and abatement of air pollution.

- To provide for the establishment of central and State Boards with a view to implement the Act.
- To confer on the Boards the powers to implement the provisions of the Act and assign to the Boards functions relating to pollution.
- Formulate standards for emission from industries, Automobiles and Ambient Air Quality.