

# CLIMATE CHANGE : A GROWING MENACE OF THE WORLD

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**Abstract:** *The environment in which we live plays a vital role in our survival. It includes all the natural resources such as land, water resources, fisheries, mineral resources, marine resources, climate, rainfall and topography. Among these natural resources, climate constitutes an important one. Climate is generally use to denote a complex natural phenomenon comprising such variables as air, temperature, wind a precipitation. It is a complex system representing cumulative effects of regional or weather patterns. There has been a lot of changes in the climate all over the world, particularly in the last two decades and so on. The climate change and its adverse impacts on the environment, human health on the economy have recently risen to the top of economic and political agenda in various national and international forums and meetings on the environment. It is necessary to review the environmental damages and the public health risks to combat this growing menace. The article tries to study the phenomenon of climate change and its causes and consequences.*

**Key words :** *Climate change, Global Warming, Ozone Depletion, Green house Gases, Acid Rain, Deforestation.*

## 1. INTRODUCTION:

The term climate is generally used to denote a complex natural phenomenon comprising such variables as air, temperature wind and precipitation. It is a complex system representing cumulative effects of regional or weather patterns; Solar energy is the driving force in the earth's climate. There has been remarkable changes in the climate all over the world, particularly in the last two decades and so on. Studies have revealed that human activities may cause large disturbances in regional and global climate. The climate change and its adverse impacts on the environment, human health and the economy have recently risen to the top of economic and political agenda in various national and international forums and meetings on the environment. The must important climate change that have come to the fore recently includes acid rain, global warming, ozone layer depletion, deforestation and bio diversity depletion, all these have adverse impacts on the human health, and the ecosystem around the world. So it's time to fix the problem and take necessary steps to tackle these problems.

## 2. OBJECTIVES:

- To understand the term "climate change".
- To study its causes and consequences

## 3. METHODOLOGY:

The study is descriptive in nature, which is based on secondary data. The data have been collected from various published sources like journals, books, research articles and websites.

### Is the Global Climate Changing?

Weather is the condition of the atmosphere at a particular place and time, such as the temperature, humidity, rain, wind etc. Climate is the long term pattern of weather conditions for a given area.

Until the middle of the 20<sup>th</sup> century, the earth's climate was generally regarded as unchanging, but it is now known to be in a continuous and delicate state of flux. Relatively small changes in climate could have major effect on our resources like food, energy and water. The factors that influence global climate are the flow of Solar energy, the condition of the atmosphere, the shape and rotation of the earth and the currents and other processes of the ocean. The most important climate change that have come to the fore recently and that are harmful include global warming, ozone depletion, deforestation, acid rain and bio diversity depletion.

### Global Warming

One of the important climate change is the threat of long run increase in the surface temperature of the earth. The affect of global warming or green house gases are long term and largely irreversible. The enclosed glass panel allows the sunlight and traps the infrared radiation and warms the interior of the green house. The greenhouse gases

like carbon dioxide, methane, chlorofluorocarbon, and nitrous oxides play a similar role, keeping the earth warm and making it habitable. When human activity increases, the concentration of these gases will increase and thereby increases the atmosphere temperature above what is needed. This phenomenon of gradual increase in atmospheric temperature due to green house effect is called global warming.

### Effects of Global Warming

Accurate predictions are difficult, but all computer models indicate on average rise of 3°C by 2100. An increase of just 1.5°C in the mean global temperature could cause a major change in the climate. The change is likely to be greater than anything experienced during the last 10,000 years.

Global warming is likely to have a wide variety of effects on the following.

- Climate change

Regional and seasonal weather patterns will change, with longer summers and shorter winters. Extreme weather conditions like floods and droughts are likely to occur more often.

- Ocean and coasts

The ocean has become warmer and sea levels are rising. The melting of polar ice caps is adding to the problem.

- Melting of glaciers, ice caps and permafrost

The most dramatic evidence of global warming is the melting of the Arctic.

- Water, Agriculture and Food

Extreme floods and droughts are likely to have serious effects on water resources, agriculture and food security:

- Loss of top soil, erosion of soil, and desertification.
- Overflow of sewage systems and resulting water pollution and epidemics.
- Amount and location of fresh water affected by changing rainfall, melting ice and more evaporation.
- Warmer water attracting more organisms and getting contaminated.
- Sea level rise bringing salt water into coastal marshes and aquifers.
- Drying up of fresh water sources: For example if the Himalayan glaciers are gone, there will be no water for 500 million people.

- Animals, Plant Species and Human Beings

Thousands of animal and plant species will go extinct, unable to adjust quickly enough to the new conditions. Extreme weather will increase human migration. There will be many millions more of environmental refugees. People living on the coasts will suffer extensive damage due to sea level rise and cyclones.

- Public Health Hazards

Warmer climate, particularly in the tropics, may lead to increased mosquito menace and mosquito - borne diseases like Malaria, Dengue and Filariasis. Today, Malaria causes an estimated 1.5 to 2 million deaths worldwide.

### Solutions to Arrest Global Warming

- Stop using fossil fuels, switch over to low or no carbon fuels.
- Reduce methane production from livestock and rice fields.
- Increase afforestation.
- Tax should be imposed on carbon consumption.
- Use compact fluorescent (CFL) bulbs.
- Use recycling bins, composting etc and recycled paper.
- Buy minimally packaged goods. Less packaging could reduce our garbage significantly.
- Use public transportation.
- Unplug unused electronics.
- Insulate anything that uses energy to stay at a different temperature from its environment.

### Acid Rain

When atmospheric water droplets combine with a range of manmade chemical air pollutants, acidic rain is formed. It could also be in the form of acidic mist or snow. The main pollutants involved are oxides of nitrogen and sulphur. In nature, volcanoes, fires and decomposing matter emit these substances in small amounts. However, since the advent of the Industrial Revolution, human activities have been releasing such pollutants in large quantities. Such emissions are very high in the major industrial centers and have been increasing rapidly since mid twentieth century.

Automobiles and coal and oil fired power stations are major sources of acid forming compounds. In fact, any burning of coal, oil and (to a lesser extent) natural gas produces them. The acid rain ultimately falls on the ground, sometimes hundreds of kilometers from the area in which it formed and generally one to four days later. The effects are quite damaging.

### **Effects of Acid Rain**

When soil is acidified, it leads to loss of productivity. The acidification damages plant roots and they are not able to draw in enough nutrients to survive and grow.

When trees, particularly conifers, are exposed to acid rain for several years. They lose their leaves and die. This is one of the several causes for the decline of forests in Europe, North America and Japan. Plants like orchids, Lichen and moss are also very sensitive to acid.

Acid rain falling on lakes and rivers leaves them clear a lifeless. Thousands of lakes in Sweden, Norway and Canada have been permanently affected by acid. Fish populations have died and so did species like otters, amphibians and birds that depended on fish for their food.

Acid rain harms people directly when they breathe in the acidic air. Acid rain can also harm people indirectly when they eat fish caught in affected lakes or rivers.

Old buildings are also threatened by acid rain; the famous St.Paul's cathedral in London has decayed more in the last fifty years than in the previous two centuries. Some famous statues, such as the Lincoln Memorial and Michelangelo's statue of Marcus Aurelia's have started deteriorating because of acid rain. The same is true of many historic buildings in Europe.

The Taj Mahal was also threatened by acid rain caused by factories in Agra.

A side effect of acid rain is the leaching of aluminum out of the soil into water bodies. Aluminum is very toxic to fish and the birds that prey on the fish. Sometimes acidification leads to the teaching of cadmium and this can affect animals.

### **What can be done about Acid Rain?**

Pouring powdered limestone into water bodies is a rapid, but short lived, method of reducing acidity. A more permanent, but slow and expensive, method is the timing of surrounding soils.

Some technologies for reducing emissions are flue gas desulphurization in power stations and catalytic converters and engine modifications in automobiles. The best way, of course is to reduce emissions.

### **The Problem of Ozone Layer Depletion : Causes and Effects**

Ozone is a poisonous gas made up of molecules consisting of three oxygen atoms. This gas is extremely rare in the atmosphere, representing just three out of every 10 million molecules. 90% of ozone exists in the upper atmosphere or stratosphere between 10 and 50 km above the earth.

The Ozone layer in the atmosphere absorbs most of the harmful ultraviolet – B (UV-B) radiation from the sun. It also completely screens out the deadly UV-C radiation. The ozone shield is thus essential to protect life.

Depleting the ozone layer allows more UV-B to reach the earth. The result would be an increase in skin concerns, eye cataracts, weakened immune systems, reduced plant yields, damage to ocean ecosystems and reduced fishing yields and adverse effects on animals.

In the 1970's Scientists discovered that when CFC's, finally break apart in the atmosphere and release chlorine atoms, they cause ozone depletion. Bromine atoms released by halons have the same effect. These are called ozone depleting substances (ODS).

When measurements started in the early 1980's scientists noticed that the ozone layer over the Antarctic was weakening. The land area under the ozone depleted atmosphere increased steadily to more than 20 million sq.km since then. In 2000, the area of the ozone hole reached a record 29 million sq.km.

### **Solutions to Tackle the Problem**

- Use of plastic should be banned.
- The production and use of CFCs should be banned.
- New technologies should be adopted to recapture the CFC's released.

### **Deforestation**

Commercial logging methods directly and indirectly lead to deforestation. Logging companies create infrastructure, especially roads, in forests to make their tasks easier. However, roads provide easier access to interior

parts and encourages the entry of invasive species, hunters, poachers, tourists, plant collectors and people in general.

This, in turn leads to further exploitation of the resources. The construction of dams in forests invariably causes enormous damage. Dam reservoirs inundate and destroy forests and their biodiversity.

### **Impact of Deforestation**

Deforestation exposes soils and shade species to wind, sunlight, evaporation and erosion. Soil fertility goes down due to the rapid leaching of essential mineral nutrients. Topsoil is eroded and this accelerates siltation in dams, rivers and the coastal zone. The increased sedimentation harms downstream fisheries.

When the forest disappears, there is no regulation of the flow into rivers. As a result floods and droughts alternate in the affected areas.

Deforestation, degradation and fragmentation of forests affect many species and lead to the extinction of some. In particular, migratory birds and butterflies suffer due to the loss of their habitat.

Local and global climate changes can occur. Studies have shown that about 97% of the water absorbed from the soil by the roots evaporates and falls back on land as precipitation. When a large forest is cut down, the regional rainfall pattern may be affected.

Deforestation may also lead to global warming by releasing carbon stored in the trees. If the trees burn, the carbon is released immediately. If the trees are cut and removed, half the carbon remains in the form of branches, twigs etc. When they decompose, the carbon is slowly released.

Clearing of forests affects the local communities, who lose their sources of food, fuel, construction materials, medicines and areas for livestock grazing. What is more, they lose their culture and way of living.

### **Bio Diversity Depletion**

Bio diversity is the variety of different types of life found on earth. It is a measure of the variety of organisms present in different ecosystems. An issue that closely follows deforestation is the loss of valuable species of flora and fauna. By the turn of the century millions kinds of animals and plants are expected to be driven to extinction. By the year 2050, half of all the species alive today could be lost forever, pollution, over hunting, over fishing etc, are partly responsible for this phenomenon, but by far the greatest cause of extinction is the destruction of the habitats, for farming, fuel, industry etc.

### **4. CONCLUSION:**

Climate change refers to how people's action change the climate of a planet. Humans have always been affected by the natural environment. Changes in climate and any extreme weather conditions affect us. There is no dispute about the increased accumulation of green house gases in the atmosphere. There is, however a minority who believe that our understanding of climate is not sufficient to make any prediction of global warming, Most scientists agree with the environmentalists that the unchecked increase in greenhouse gases is too great a risk to take. Meanwhile, more and more studies confirm that the global warming is a reality. Thus it is high time that our planners review the entire position of development and environmental crisis and evolve a new process of balanced and rational development which will also preserve the environment,

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