

GLOBAL WARMING

The advent of new century has brought many changes in the environment. Many environmental issues have sprung up which are causing havoc on the society. One such issue, which is familiar to many people, is 'Global Warming. Many opinions from doom-laden to dismissive have been expressed concerning this calamity. Global warming is threatening the fragile shell of our planet and has now become the most urgent problem of our lifetime. According to the latest scientific evidence revealed by ABC News and featured in Time Magazine recently, the world we live in may be warming at a dangerously rapid rate due to an increase in greenhouse gas emissions, carbon dioxide, and other man made pollutants. Glaciers are melting and our shorelines are in danger of being overrun by water. Extreme temperatures are experienced everywhere around the blue planet and there are many side effects to this phenomenon. The global warming has become a big issue; and may turn into a very important consideration in the near future.

Origin

The term 'global warming' was first used in a science paper by Wally Broecker in the journal called "Are we on the brink of a pronounced Global Warming?" on 8th August 1975.

9.6.2 Meaning of Global Warming.

Global warming is the unusually rapid increase in Earth's average surface temperature. Earth has warmed by about 1 degree Fahrenheit over the past 100 years. Many scientists believe that the earth is warming because of the things humans have done. It is also believed if this trend continues earth will continue to become warmer and endanger lives by changing environments and animal habitats.

Global warming is the observed and projected increases in the average temperature of earth's atmosphere and oceans. The earth's average temperature rose about 0.6 °C (I.I.F) in the 20th century. According to different assumption about the future behaviour of mankind, a projection of current trends as represented by a number of different scenarios, gives temperature increases of about 3 to 5 °C (5° to 9°F) by the year 2100 or soon after words. A 3°C or 5°F rise would likely to raise sea levels by about 25 meters i.e. about 82 feet.

Global warming is caused mainly by gases produced when people burn coal, oil and other fossil fuels. All these activities heat up the blue planet and a rise in temperature is evident. A warmer earth means more heat, melting glaciers, rising sea levels, floods, droughts and wildfires. It could also mean more diseases that spread to millions of people.

Causes of Global Warming

1. Carbon Dioxide Emissions: Carbon Dioxide is one of the primary causes of global warming. It is being pumped into our atmosphere at an insane pace. Although other greenhouse gases viz. methane (CH₄), nitrous oxide (NO₂), CFCs, Ozone all wreck havoc on the planet but for the most part CO₂ is the main cause of global warming. In different ways CO₂ enters into earth's atmosphere and causes damage to occur are discussed as follows:

- Due to natural activities such as volcanic eruption
- Human breathing
- Burning of fossil fuels erhit plenty of CO₂,
- 40% of all carbon dioxide emission is caused by power plants in which coal, natural gas, garbage etc are burnt.
- Pollution from automobiles and vehicles
- CO₂ is also released from aircrafts and jet crafts traveling in the sky.

2. Methane Gas: The next most defined cause of global warming is methane gas. Methane is twenty times more potent than carbon dioxide. Although the content of methane gas is very less in the atmosphere; but since it is so powerful. It is the second largest link in the global warming events.

3. Water Vapors: The point seems to be very shocking but water vapors indeed are one of the most potent causes of global warming. Our atmosphere contains a set parameter of water as vapors. When the lower atmosphere (troposphere) has excess water vapor, then this gaseous H₂O is a potent greenhouse gas.

4. Nitrous Oxide: Another factor which is the major cause of global warming is nitrous oxide. Ideally our atmosphere contains 6% of this gas but because of cars using catalytic converters; fertilizer plants; manufacture of nylon etc. it has increased by 25%.

5. Human Causes: The earth has cycled through many phases of warming and cooling over the billions of years due to the greenhouse effect. There are many natural factors that contribute to the greenhouse effect, but most of these occur very slowly over many millennia. Temperature is increasing faster than ever on a global scale that cannot be explained by these natural processes. The current warming is anthropogenic i.e. it is created by humans. Lets see how:

- ❖ **Increase in Population:** If we start investigating the anthropogenic causes of global warming, we are one of the most important cause of global warming. population. More population means requirements, which includes food electricity and transport. In order to fulfill these requirements, more fossil fuels are consumed, which eventually leads to global warming. Humans breathe out carbon dioxide, and with an increasing population, the amount of carbon dioxide humans breathe out also increases and leads to global warming. More
- ❖ **Deforestation:** We believe to be able to control nature instead of trying to arrange ourselves with nature. This haughtiness is the true cause of global warming. Man for his multifarious needs is cutting the trees at a very rapid pace. And all of us know that these trees are our only protectors since they swallow in CO₂, and give us oxygen. The endless and ruthless cutting of trees is adding to the already existing problem.
- ❖ **Use of Fossil Fuels:** The drastic increase in global warming is because of burning of fossil fuels. Human beings are using these fossil fuels at a rapid fire speed; despite of the fact that these fuels takes year to generate and are near to extinction.
- ❖ **Farming Practices:** Some farming practices increase the level of methane and nitrous oxide in the atmosphere, which further leads to global warming.
- ❖ **Industries:** Various industries and factories release amount of greenhouse gases in the atmosphere, contributing largely to global warming.
- ❖ Urbanization, modernization and globalization also cause global warming.

To sum up, we can say that the true cause of global warming is our thoughtless attitude to nature. It is in own interest to induce fundamental changes in our attitude and behavior towards nature: Modesty and humility; admiration and respect for all life on earth. If we want to save ourselves and our planet we have to understand that 'Not others need to change, we must change ourselves.'

Effects of Global Warming

The effects of global warming range from rise in sea levels the extinction of certain species of flora and fauna. The increase in temperature due to global warming will trigger a series of events which can cause a lot of destruction on the planet. There is no doubt that the effects of global warming are felt in many ways now and the scenario will worsen in the coming decades. Effects are, and will, be increasingly noticeable in the following areas;

1. Rising Sea Level: As the temperature increases, the polar ice melts down. The water so created joins inland fresh water reservoirs on the pool of oceans. This leads to a rise in the sea level. Over the last century, sea levels have increased by 4 to 8 inches, and by 2100, it's expected to increase to 35 inches. An additional 2 degree rise in global temperature will lead to the complete melting of the Greenland ice cap, which will cause the sea level to rise by 5 to 6 meters. Such a rise will cause many of the low lying areas, such as the US Gulf Coast and Bangladesh, as well as islands, such as Lakshadweep, to submerge underwater.

2. Destabilizing of Climate Patterns: The overall destabilization of global climate is a major effect of global warming. Global warming creates climate extremes. In the northern hemisphere have decreased by almost 50% over the last century. This meltdown has further resulted in floods, lake overflows and landslides. The slow melting of Himalayas result in the steady flow of water in river Ganga. The Ganges is the lifeblood of over 500 million people. Overall, the planet experiences extreme weather conditions, characterized by flood and droughts, heat waves and cold waves, and extreme storms like cyclones and tornadoes.

3. Increased Rainfall: If the temperature increases, the air will be able to absorb more moisture in the form of water vapour. When this air is cooled it becomes liquid and falls to the earth as rain. The greater the amount water vapour absorbed by the atmosphere the greater the rainfall. This increased rainfall results in increased erosion. Erosion results in dying plant life and finally desertification.

4. Acidic Oceans: Our oceans act as earth's largest sink for the absorption of carbon dioxide from the atmosphere. The oceans try to maintain the balance in the atmosphere by absorbing the excess CO₂. But excess absorption has resulted in the production of mild carbonic acid known as ocean acidification. Although there is a very slight change in the pH balance but it results in damage of coral reefs which are home to vast majority of undersea life. Ocean acidification also leads to oxygen depletion. And less oxygen means less fish.

5. Droughts: Rising temperature causes floods in some areas and droughts in others. The droughts create perfect conditions for forest fires. These fires are suddenly emerging on a larger scale. The recent example of forest fire was observed in Australia in 2009.

6. Widespread Extinction and Migration of Flora and Fauna: A rise of global temperature also hampers the rich biodiversity of various ecosystems. Sudden change of temperature leads to mass migrations as well as mass extinction. Polar bears, emperor penguins, gyrfalcons and snowy owls are just a few of the species which are currently at risk. When herbivores migrate to find a genetically compatible climate they face the risk of starvation because their traditional foodstuffs have not migrated with them. According to the Intergovernmental Panel on Climate Change (IPCC), an increase in global temperature by 1.5 to 2.5 degrees will make 20 to 30 percent of species vulnerable. While a rise of about 3.5 degrees will make 40 to 70 percent species extinct.

7. Water Availability: Increasing droughts, vanishing glaciers and declining rainfall will severely reduce the availability of potable water.

8. Decreased Crop Yields: Earlier it was believed that a by product of global warming would be the increased yields of agriculture because the plants through photosynthesis would make good use of increased carbon dioxide in the atmosphere and produce abundance of flora. Certainly, some areas like Iceland have benefited from the same. But it goes without mentioning that overall effect of global warming on agriculture is decidedly negative. As floods and droughts (which are caused due to global warming) do not contribute to a good yield. Poor countries like Bangladesh are completely at risk to massive starvation caused by coastal flooding.

9. Human Health: Human health will also suffer as a consequence of climate change. Overheated environment is a house many infectious diseases are there like malaria and the lyme-disease. The increased content of greenhouse gases in the atmosphere can severely affect and damage our lung tissues as well as lung capacity.

10. Economic Effects: Most of the effects of global warming are not good. And these effects spell one thing for the countries of world: economic consequences. In 2001 the UN estimated the cost of increased disasters due to global warming would be more than 300 billion dollars per year by 2050.

International Protocol on Global Warming

1. The First Earth Summit: The United Nations Conference on Environment and Development (UNCED) was held at Rio De Jane Rio, Brazil is 1992. During this summit the principles for reducing emission of greenhouse gases were established. This summit has been one of the international community's most essential tool in the struggle to promote sustainable development.

2. Kyoto Protocol-Amendment to International Treaty on Global Warming: The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC) aimed at fighting global warming. It was negotiated in Kyoto, Japan in December 1997. As of November 2009, 187 states have signed and ratified the protocol. This was an agreement among the industrialized nations of the world to reduce the emission of six greenhouse gases by almost 7% from 1990 level's during the period 2008-2012The goal of Kyoto protocol was the stabilization of green house gases concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference in the climate system. Critics of Kyoto protocol focused on the fact that levied restrictions only on the developed nations of the world, and not on developing countries like China and India.

3. Montreal Protocol: Montreal Protocol, opened for - signature in September 1987, didn't directly target the increasing trend of global warming but indirectly the focus was on emission of greenhouse gases. It is an international treaty designed to protect the ozone layer by giving due check on the substances responsible for ozone depletion. It has been ratified by 196 states and is considered to be the most successful international agreement, till date.

4. Clean Air Act: The government made a law called "The Clean Air Act' so that there is less air pollution. This Act helped to lessen global warming.