



## **CLIMATE CHANGE AND GLOBAL WARMING**

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### **CLIMATE CHANGE**

Climate change is a change in the statistical distribution of weather over period of time that range from decades to millions of years. It can be change in the distribution of weather and events around an average (for example , greater and fewer extreme weather events). Climate change rainfall patterns, amplifies coastal erosion, lengthens the growing season in some regions, melts ice caps and glaciers, and alters the ranges of some infectious diseases. Climate change may be limited to a specific region or may occur across the whole earth.

In Earth's history before the Industrial Revolution, Earth's climate changed due to natural causes unrelated to human activity. These natural causes are still in play today, but their influence is too small or they occur too slowly to explain the rapid warming seen in recent decades.

We all understand that climate is not static, it is dynamic, always changing. Earlier the Changing Climate always followed a pattern, which is being broken now. Now the climate is not following its regular changing pattern. It has become erratic. This word also brings with it a sense that now it is also becoming very tough to follow the past weather patterns and predict that of the future.

Climate Change, to be put very simply, is the change in Earth's Weather pattern. As it was thought to be a warming of the earth and its atmosphere because of the trapping of Sun's heat by Green House Gasses ( $\text{CO}_2$ ,  $\text{CH}_4$ ,  $\text{N}_2\text{O}$ ,  $\text{HFC}_s$ ,  $\text{H}_2\text{O}$  etc.).

But gradually it was seen that it is not just a mere warming of the globe that is happening but this warming is also causing other phenomenon. So, in my view, it can be said that Climate Change has been caused by Global Warming which in turn is a result of the Green House Effect.



## **Causes of climate change**

There are some causes of climate change shown below:

### **Natural forces:**

1. Natural fluctuations in the sun's intensity.
2. The complex motion of the earth around the sun.
3. Volcanic eruptions.
4. Shorter-term cycles like El Nino.

### **Human Factors:**

1. Increases in green house gases.
2. Deforestation.
3. Other land use changes.

## **GLOBAL WARMING**

Global warming is the unusually rapid increase in Earth's average surface temperature over the past century primarily due to the greenhouse gases released by people burning fossil fuels. It is a slow but steady rise in Earth's surface temperature. Temperatures today are 0.74°C (1.33 °F) higher than 150 years ago. Most of the warming is because of people burning coal and oil. Some of the warming is because humans are cutting down trees. Global warming is the effect when earth get heat up (the temperature rises). It happens when greenhouse gases (carbon dioxide, water vapor, nitrous oxide, and methane) trap heat and light from the sun in the earth's atmosphere, which increases the temperature. People, animals, and plants who cannot take the change, they will die due to the global warming. Global warming makes the sea rise, and when the sea rises, the water covers many low land islands. This is a big problem for many of the plants, animals, and people on islands. Sun is not only the source to cause the global warming because human beings are also responsible to make the dust and dirt which floats in the river and mix in the air.

The oceans are affected by global warming in other ways. It is harming and killing algae in the ocean. Algae is a producer that you can see floating on the top of the water (A producer is something that makes food for other animals through photosynthesis, like grass). This floating green algae is food to many consumers in the ocean (A consumer is something that eats the producers).



It is also destroying many huge forests. The pollution that causes global warming is linked to acid rain. Acid rain gradually destroys almost everything it touches. Global warming is also causing many more fires that wipe out whole forests. This happens because global warming can make the earth very hot. In forests, some plants and trees leaves can be so dry that they catch on fire.

### **Causes of global warming**

Many things cause global warming :-

1. **Electrical pollution:-** Electricity causes pollution in many ways, some worse than others. In most cases, fossil fuels are burned to create electricity. Fossil fuels are made of dead plants and animals. Some examples of fossil fuels are oil and petroleum. Many pollutants (chemicals that pollute the air, water and land) are sent into the air when fossil fuels are burned. Some of these chemicals are called greenhouse gasses. Petroleum, one of the sources of energy, is used a lot. It is used for transportation, making electricity, and making many other things. Although this source of energy gives off a lot of pollution, it is used for 38% of the United States' energy.
  
2. **Deforestation :-** Another thing that makes global warming worse is when people cut down trees. Trees and other plants collect carbon dioxide (CO<sub>2</sub>), which is a greenhouse gas. With fewer trees, it is harder for people to breathe because there is more CO<sub>2</sub> in the air, and we don't breathe CO<sub>2</sub>, we breathe oxygen. Plants collect the CO<sub>2</sub> that we breathe out, and they give back oxygen that we breathe in. With less trees and other plants, such as algae, there is less air for us, and more greenhouse gases are sent into the air

Some other examples of using energy and polluting the air are:

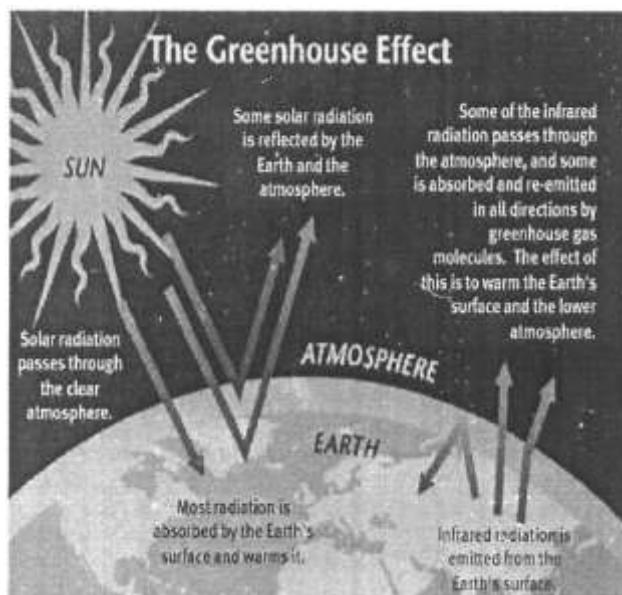
1. Turning on a light
2. Watching T.V.
3. Listening to a stereo
4. Washing or drying clothes
5. Using a hair dryer
6. Riding in a car
7. Heating a meal in the microwave
8. Using an air conditioner
9. Playing a video game
10. Using a dish washer

Warmer temperature will cause the sea level to increase. Rain and snow amounts will change. Some areas will get more rain, while some get less. Sea ice and glaciers will melt. Deserts will increase in size in some areas and decrease in others. Colder areas will warm faster than warm areas. Strong storms will become more likely and farming will not make as much food. These effects will not be the same over the entire Earth.

### **Earth's natural greenhouse effect**

Earth's temperature begins with the Sun. Roughly 30 percent of incoming sunlight is reflected back into space by bright surfaces like clouds and ice. Of the remaining 70 percent, most is absorbed by the land and ocean, and the rest is absorbed by the atmosphere. The absorbed solar energy heats our planet.

As the rocks, the air, and the seas warm, they radiate "heat" energy (thermal infrared radiation). From the surface, this energy travels into the atmosphere where much of it is absorbed by water vapour and long-lived greenhouse gases such as carbon dioxide and methane.



This absorption and radiation of heat by the atmosphere—the natural greenhouse effect—is beneficial for life on Earth. If there were no greenhouse effect, the Earth's average surface temperature would be a very chilly  $-18^{\circ}\text{C}$  ( $0^{\circ}\text{F}$ ) instead of the comfortable  $15^{\circ}\text{C}$  ( $59^{\circ}\text{F}$ ) that it is today.



The atmosphere today contains more greenhouse gas molecules, so more of the infrared energy emitted by the surface ends up being absorbed by the atmosphere. Since some of the extra energy from a warmer atmosphere radiates back down to the surface, Earth's surface temperature rises.

The green gases CFC-11 and CFC-12 make the earth hotter and hotter by absorbing maximum quantity of thermal radiation of the sun. These gasses permit the rays of the sun to penetrate but don't let the thermal radiations escape from the earth's atmosphere once they enter it. The rise in temperature disturbs the rain cycle, the ecological balance, the cycle of season etc. It adversely affects vegetation, agriculture. Thus we have to face frequent floods and droughts through the world. With the increase in temperature and melting of glaciers, even snowfall has reduced its occurrence and intensity.

According to the Human Development Report(H.D.R) 2007 developed countries should cut their carbon emission atleast by 80% by the year 2050, with 20-30% cuts by 2030. If the earth has to be saved from the adverse effects of Global warming The report also calls for 20% in carbon emission by fast growing economies like Indian and China. The UN report says that there is a small window of opportunity in this century for limiting the global temperature increase to 2 degrees centigrade . These will include flooding of coastal areas, crop failures, epidemics severe water scarcity and increase in natural disasters.

**Suggestion: -**

Some of the measures that may help to check global warming are:

- (a) Control of population growth by decreasing the birth rate
- (b) Afforestation (planting more trees on new areas)
- (c) Deforestation reversal by reforestation
- (d) Reduction in the use of chlorofluro carbons
- (e) Shift from coal to natural gas on electricity as a energy resource
- (f) To trap and use methane as a fuel



## Conclusion

Today the need of the day demand implementation of measures to decrease Global warming. The National mission on Strategic knowledge for climate change is intended to identify the challenges and response to climate change through research and technology development and ensure funding of high quality. The local governments should work against the emission of the greenhouse gases by improving the vehicles, creating awareness among the people. Selling environment friendly appliances; encourage recycling of paper, metal and glass etc. Such efforts are needed by the people at the grass root.

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