

## Cause of Global Warming and its Impact

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**Abstract:** Global warming is the term given to the continuous increase in the average temperature of the earth's near-surface air and oceans since the mid-20<sup>th</sup> century. Global surface temperature increased  $0.74 \pm 0.18$  °C between the start and the end of the 20<sup>th</sup> century and this trend is projected to continue. According to the Intergovernmental Panel on Climate Change (IPCC, a United Nations panel established by the WMO and UNEP to assess information relevant for understanding climate change) the main reason for this was the increasing content of greenhouse gases resulting from human activity such as fossil fuel burning and deforestation. The climate model projections in the latest IPCC report indicate that the global surface temperature may rise a further 1.1 to 6.4 °C during the present century. The IPCC, headed by Dr Rajendra Kumar Pachauri, shared the 2007 Nobel Peace Prize with former U.S. Vice President Al Gore.

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### I. Introductory Observation:

The increase in global temperature is likely to raise sea levels and probably change the quantity and quality of precipitation, probably including expansion of subtropical deserts. The other probable effects include alterations in the frequency and intensity of extreme weather events, extinction of species, and variation in agricultural production. Across the globe, debate continues regarding global warming, its causes and remedies. The popular options are **mitigation** to cut future emissions; **adaptation** to curtail the damage already caused by warming; and, more ambitiously, **geo-engineering** to reverse the trend of global warming. A **carbon credit** implies that a value has been assigned to a reduction of greenhouse gas emissions. Carbon credits and markets are key components of global attempts to mitigate the growth in concentrations of greenhouse gases. One carbon credit is equivalent to one ton of carbon dioxide, or in some cases, carbon dioxide equivalent gases. Carbon credits create a market for cutting greenhouse gas emissions by giving a monetary value to the cost of polluting the air. Thus emissions become an internal cost of performing business and are apparent on the balance sheet alongside raw materials and other liabilities or assets.

Most nations have signed and ratified the **Kyoto Protocol**, which aims at cutting greenhouse gas emissions. It was initially adopted on 11 December 1997 in Kyoto, Japan and entered into force on 16 February 2005. As of November 2009, 187 states have signed and ratified it.

Climate responds to many types of **external forcings**, like radiative forcing due to changes in atmospheric composition (primarily greenhouse gas concentrations), changes in volcanic eruptions, solar luminosity and changes in earth's orbit around the sun. The **greenhouse effect** is the process by which absorption and emission of infrared (IR) radiation by gases in the atmosphere warm the lower atmosphere and surface of a planet. The major greenhouse gases are **water vapor** that causes about 36–70 % of the greenhouse effect; carbon dioxide (CO<sub>2</sub>) that causes 9–26 %; methane (CH<sub>4</sub>) that causes 4–9 %; and ozone (O<sub>3</sub>) that causes 3–7 %.

### Impact: Global Warming

As per The Intergovernmental panel on climate change, (IPCC) , About sixth of the world's total population lives in the regions which is able to be stricken by the melting of Ice within the polar and ice mass region and result in rise of sea level .

a lot of heat waves would seemingly be caused by the hotter atmosphere, More significant rain and an increase within the intensity of hailstorms and Thunderstorms. the foremost deadly consequence of world warming is rising ocean levels, with rising temperatures inflicting ice and glaciers to soften and melting. This could cause a rise in water levels within the oceans, rivers and lakes which will be wasted by flooding.[6]

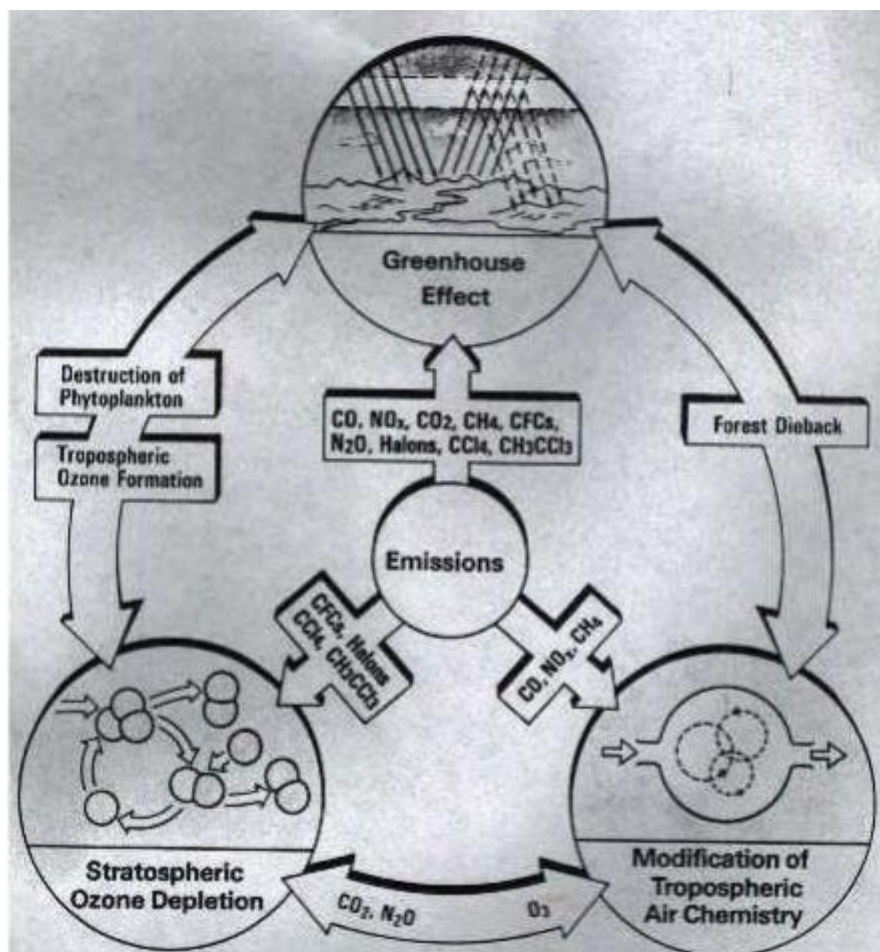


Figure 1. Simplified illustration of relationship between some of their impact categories that interact with global warming

Global warming, although with unclear manifestations in regional and local climates, is likely to exasperate. impacts from already existing environmental stress including acidification, stratospheric ozone depletion, rising tropospheric oxidant levels, the flux of heavy metal in the soil and water Impact categories can be exasperated by, as well as aggravate, climate change (meteorological change). A wide range of climate-forcing substances ( $\text{NO}_x$  – nitrogen oxides,  $\text{CO}$  – carbon monoxide, ,  $\text{CFCs}$  – chlorofluorocarbons (freons),  $\text{CO}_2$  – carbon dioxide,  $\text{N}_2\text{O}$  – nitrous oxide, halons – CFC- like chemical substances containing bromine instead of chlorine,  $\text{CH}_3\text{CCl}_3$  and  $\text{CCl}_4$  – various chlorine-containing substances,  $\text{CH}_4$ – methane, and several more) are involved in these interactivity, directly or indirectly.

Among a multitude of complex linkages, an example is the case wherein global warming confer to Lowering of temperature in the stratosphere, the ozone becomes highly vulnerable to wrecking by chlorine; because lower stratospheric temperatures provide for an increasing occurrence of polar stratospheric cloud-particles, the surfaces of which interact with the ozone-depletion process. Depletion of ozone leads to the increase in the amount of ultraviolet radiation reaching the Earth's atmosphere and ground, which in turn affect forest growth due to escalated potential for build-up of photochemical oxidants. Reduced forest growth, in turn, implies a diminished capacity for vegetational uptake of carbon dioxide, which is a greenhouse gas. The greenhouse effect can then increase, leading to further cooling of the stratosphere, and thus to increasing UV-light penetration generating further increases of oxidants is an example of the vicious cycle between climate change, natural resources deterioration and ground near pollution. Since the above illustration first appeared (Study Commission of the 11th German Parliament, Preventive Measures to Protect the Earth's Atmosphere, Bonn 1989) the number of observed and potential feedback linkages between the above realms (modifications of tropospheric Chemistry greenhouse effect, stratospheric ozone depletion) and many additional realms (aerosols, land use, demographic change including increasing coastal-zone urbanization, and others) has increased substantially. At the same time, several relationship related to the greenhouse effect and global warming have been understood to be more complex than anticipated. In a Report by

IPCC(IPCC, Working Groups' Third Assessment Reports, 2001). One example is the role of atmospheric aerosols, a major factor behind recently revised climate-changescenarios

### **Effects on Living Beings**

Global warming may severely affect the health of humans as well as animals. blood pressure and heart diseases cases may sore up due to stress from excess heat environment. Increasing rate of Crop failures and famines,are a direct impact of heated earth environment, which may result in a decline of human body resistance to viruses and infections. as people will shift from regions of higher temperatures to regions of comparatively lower temperatures due to global warming various communicative diseases will transfers from regions to regions. Warming up of oceans and other surface waters may cause severe cholera widespread and harmful infections in some types of sea food.

### **Extreme Weather**

Droughts in South America and North Africa is resulting in failure of crops and drying up water sources. This giving rise to global security threat, as humans migrate to survive. Disengaged youth are particularly at risk to radicalization. The drought in the region of California raised nut and fruit prices. corn crops got destroyed by Midwest drought, raising the price of beef Pests have weakened forests, allowing more often hazardous and destructive wildfires.

Several world leaders gathered in Copenhagen in December 2009 for the United Nations Climate Change Conference (**COP15**). The agenda was to discuss and find means to copewith the rise in CO<sub>2</sub> emissions, which in addition to ocean acidification, may cause global warming and elevate the ocean level as much as 60 cm until the end of this century. This will in turn jeopardize the life of populations living on islands and on ocean shores. According to moderate estimates, the lives of 100 million people may be threatened. However, skeptics maintain that the climate change is a natural phenomenon, that man's effect on nature is largely overrated. Global warming hoax refers to the claim that the scientific consensus on global warming is inaccurate, and has been planted for financial political, and ideological reasons.

Due to the huge complexity of the atmosphere, the most useful tools for predicting future changes are **climate models**, which are computer-based mathematical models that simulate, in three dimensions, the climate's behavior, its components and their interactions. They are constantly improving based on both – (i) our understanding and (ii) the increase in computer capacity. Projections of future climate change will depend on how well the model simulates the climate and on our understanding of how external forces will change in the future. Still the debate goes on – What is the contribution of anthropogenic carbon dioxide towards global warming?

## **II. Conclusion:**

Drastic change in Climate due to global warming is a problem that our planet is facing and it has progressed a lot after the rapid industrialization which in turn resulted in increased fossils fuel consumption which are major source of gases giving rise to global warming . The emission of greenhouse gases has expedited the climate change and made our weather more severe. However, the world's dependence on fossil fuel for energy, transportation, and manufacturing have created a major deterrent for us to switch to renewable energy. I would like to conclude about the solutions that have been developed to prevent climate changes from accelerating, that “We need to optimally transit from present energy sources of fossils fuels to renewable energy sources. Also, we should adapt to the changes that have arise and will occur. Our focus should be to prevent any future changes from occuring, but adaptation is a vital thing we need to carry out” . Scientists, environmentalists, communities, as well as policy makers need to diligently and cooperatively work together to overcome these challenges and counter climate change.

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