

# Global Warming and greenhouse effect

6<sup>th</sup> sem

Paper: 6.1

{ chapter: Global Warming  
chapter: Green house effect } Same thing

Global warming refers to the increase in global temperatures brought about by the ~~gross~~ increased emission of green house gases into the atmosphere. The major green house gases are carbon dioxide, ozone, methane, nitrous oxide, chlorofluorocarbon (CFCs) and water vapour.

Troposphere, the lowermost layer of the atmosphere, traps heat by a natural process due to the presence of certain gases. This effect is called Green House Effect as it is similar to the warming effect observed in the horticultural green house made of glass. The amount of heat trapped in the atmosphere depends mostly on the concentrations of "heat trapping" or "green house" gases and the length of time they stay in the atmosphere. The major green house gases are carbon dioxide, ozone, methane, nitrous oxide, chlorofluorocarbons (CFCs) and water vapours.

The average global temperature is  $15^{\circ}\text{C}$ . In the absence of green house gases this temperature would have been  $-18^{\circ}\text{C}$ . Therefore, Green House Effect contributes a temperature rise to the tune of  $33^{\circ}\text{C}$ . Heat trapped by green house gases in the atmosphere keeps the planet warm enough to allow us and other species exist. The two predominant green house gases are water vapour, which controlled by hydrological cycle, and carbon dioxide, which is controlled mostly by the global carbon cycle. While the levels of water vapour in the atmosphere

have relatively remained constant, the levels of carbon dioxide have increased. Other gases whose levels have increased due to human activities are methane, nitrous oxide and CFC. Deforestation has further resulted in elevated levels of carbon dioxide due to non-removal of carbon dioxide by plants through photosynthesis.

Warming or cooling by more than 2°C over the past few decades may prove to be disastrous for various ecosystems on the earth including humans, as it would alter the conditions faster than ~~some~~ some species could adopt or migrate. Some areas will become inhabitable because of drought or floods following a rise in average sea level.

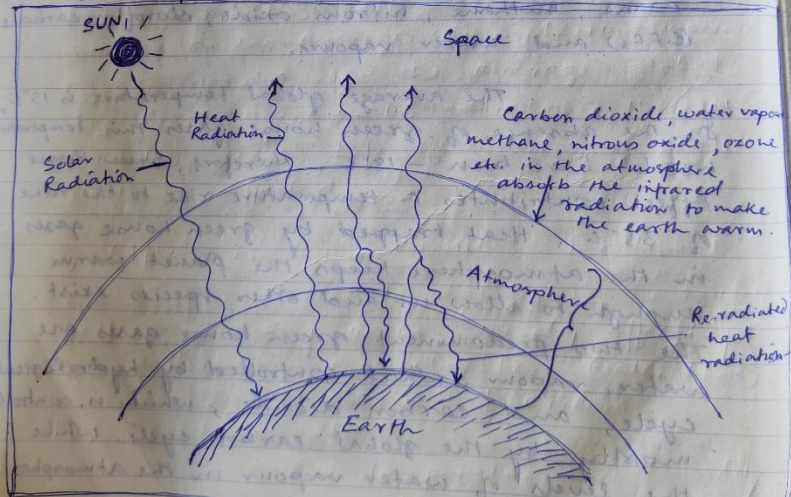


Fig - The green house effect.

The figure clearly indicates the effects of greenhouse gases. The atmosphere of the earth is transparent to the incoming short-wave solar radiation. It is translucent to the long-wave infrared radiations which are absorbed by the greenhouse gases to make the earth warm.

#### // Sources of greenhouse gases:

- i) The main sources of carbon dioxide are fossil fuel burning and deforestation.
- ii) The main sources of CFCs include leaking air conditioners and refrigerators, evaporation of industrial solvents, production of plastic foams, aerosols, propellants etc.
- iii) Methane is produced when bacteria break down dead matter in moist places that lack oxygen such as swamps, wetlands, etc. Production and use of oil and natural gas and incomplete burning of organic matter are all significant sources of methane.
- iv) Nitrous oxide is released from nylon products, from burning of biomass and nitrogen rich fuels, from breakdown of nitrogen fertilizers in soil, etc.