

Global Warming is the Major Ground

Causes of Climate Change

The climate of our planet is changing. The climate has always been variable, but today there is a growing concern over climate change issues, perhaps because the magnitude of the change seems to be unprecedented, more importantly, there is strong evidence to suggest that human being might be directly responsible for climate change.

Any change in climate would lead to destabilization of environmental and social conditions all around the globe. These disturbances could jeopardize the conservation of natural ecosystems and sustainability of socioeconomic systems. According to the Intergovernmental Panel on Climate Change (IPCC), global average temperature increase has reached 0.6 ± 0.2 °C over the twentieth century. There has been a widespread retreat of mountain glaciers in non- Polar Regions. In the Northern Hemisphere spring and summer sea-ice extent has decreased by about 10% to 15% since the 1950s. The global ocean heat content has increased since the late 1950s and the global average sea level rose by at least 0.1 m during the twentieth century.

The IPCC also develops possible scenarios of anthropogenic emissions in order to project future climate trends. Depending on these scenarios, climate models project that by 2100 atmospheric CO₂ concentrations will reach 540 to 970 ppm. The global average surface temperature is projected to increase by 1.4 °C to 5.8 °C over the period 1990 to 2100. Global mean sea level is projected to rise by 0.09 m to 0.88 m between 1990 and 2100. The impact of climate is unlikely to be incremental; more likely are changes in the character of existing natural hazards- storm surges, floods, droughts and other extreme meteorological events. These risks must be understood and factored into development.

GHG Emission and Global Warming:

The Major Cause Our planet is getting warmer due to the so called greenhouse effect. This effect



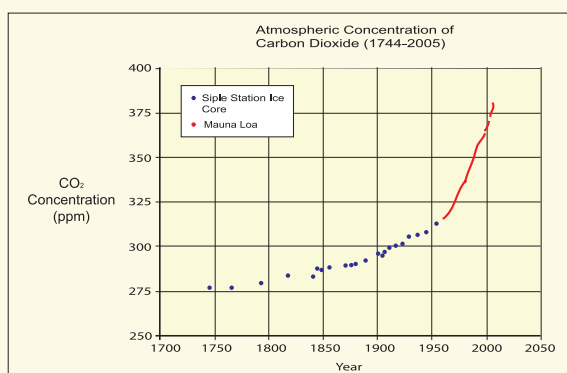
consists of trapping the energy - radiated by the earth into the atmosphere - instead of allowing it to escape into outer space. The greenhouse gases (GHG) involved in this regulatory mechanism are usually found in the atmosphere at very low concentrations. Carbon dioxide (CO₂) molecules are never found at concentrations higher than a few hundred parts per million (ppm) of air parcels. Nevertheless they play a critical role in the climatic equilibrium of the planet. Prior to the Industrial Revolution, CO₂ concentration was 280 ± 10 ppm for several thousand years. But the present atmospheric CO₂ concentration is above 360 ppm and such a level has never been reached over the past 420,000 years. Changing CO₂ concentrations in the atmosphere will undoubtedly have an impact on the climate system, but the processes involved are multiple, complex, and feedback on one another.

The 2001 IPCC report's pivotal assertion was that mankind or human activities, that emitted huge volume of 'heat trapping' gases in the earth's atmosphere, was to blame for this warming effect. The heat trapping gases, commonly known as 'greenhouse gases' mainly refers to carbon dioxide (CO₂), which is produced by the burning of fossil fuels, such as oil, coal and gas. Other gases, such as methane and nitrous oxide, also play an important part in locking warmth into the earth's atmosphere.

Table: Pre-industrial and 1990 concentrations of major greenhouse gases and their recent annual growth rate

	CO ₂	Methane	N ₂ O	CFCs
Pre-industrial Concentration	280 ppmv	800 ppbv	288 ppmv	
Concentration in 1990	354 ppmv	1720 ppbv	310 ppbv	CFC11=280 pptv CFC12=484 pptv
Recent annual growth rate	0.5%	0.6-0.8%	0.2-0.3%	CFC11=4% CFC12=4%

Along with the increasingly regular emission of the green house gases, the following activities are considered as the potential Carbon-dioxide emitting sources;

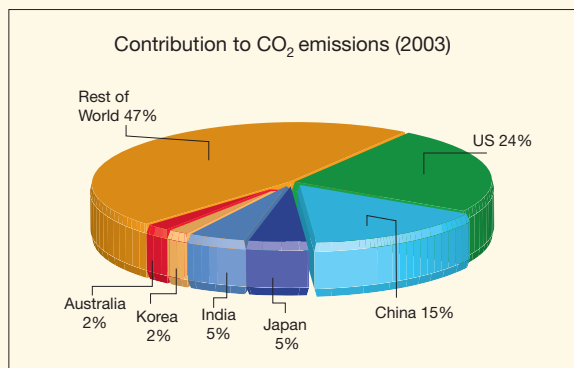


- Combustion of fossil fuel annually adding 5.7 X 10⁹ tons of carbon in the atmosphere.
- Deforestation particularly in the growing industrialized countries annually adding 0.6 - 0.5 X 10⁹ tons
- Massive utilization of natural coal in China, annually 200 tons of coal, could contribute upto 3 percent of world's emissions of Carbon-di-Oxide.
- Gradual increasing trends of cement production, usually 5 percent annually, worldwide also adding considerable Carbon in atmosphere.

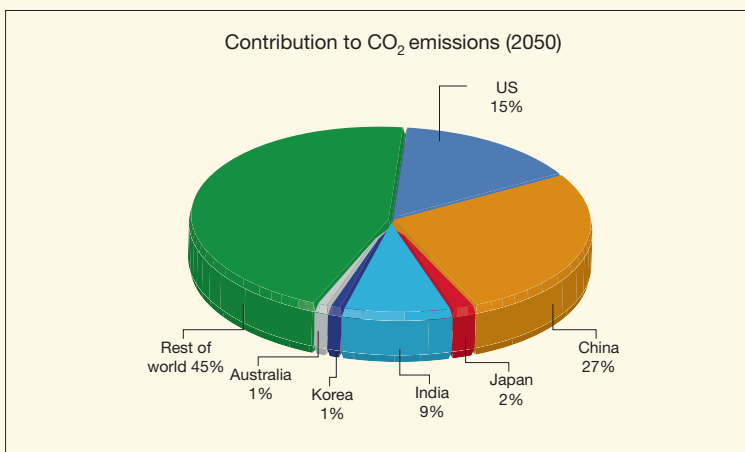
Deforestation and GHG Concentration

Tropical deforestation on the other hand is responsible for up to 25% of the total human-caused greenhouse gas emissions each year

Deforestation results from a variety of cultural and economic factors. Demographic pressure, infrastructure and agricultural expansion are among the main drivers of conversion of forests to other land uses. Another reason for loss of forests is the unsustainable extraction of forestry products. This includes both legal and illegal logging activities as well as the extraction of fuel wood and other forestry products. Where forests are poorly managed and



timber and wood products are extracted without restoring the loss, forests degrade until they are lost. The highest deforestation rate can be observed in tropical Asia, followed by Africa and South America. Forests are cleared fastest in Brazil, India, and



Indonesia. With current deforestation rates, Indonesia is expected to have lost its primary forest by 2012. On the other hand the forest coverage is growing in the Caribbean. Additional greenhouse gas (methane) emissions result from the drainage of peat lands for palm oil and timber plantation.

Recommendation

Greening the Earth: Being affected by climate change, forests could play an important role in addressing climate change: by storing carbon they help to off-set the effects of anthropogenic greenhouse gas emissions. Forest ecosystems contain the majority (approx. 60%) of the carbon stored in terrestrial ecosystems and account for 90% of the annual carbon flux between the atmosphere and the Earth's land surface. Therefore it is important to conserve existing natural forest resources and also to initiate massive plantation.

Promotion of Clean Development Mechanism

Technologies: We propose the further development of mechanisms to encourage the transfer, on a commercially feasible basis, of clean technology from developed to developing countries.

Raising Accountability on Carbon Emission: We recommend for an awareness campaign on the sources of carbon emission providing households with information on the carbon footprints of items, transportation and services. It would include tagging on an item (similar to caloric reporting on food products) that allows customers to be aware of their daily CO₂ contributions.



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