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GLOBAL WARMING

ISSUES AND CHALLENGES

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GLOBAL WARMING ISSUES AND CHALLENGES

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a gas that traps heat in the earth's atmosphere. Another natural cause is that the earth goes through a cycle of climate change. This climate change usually lasts about 40,000 years.

Man-made Causes

Man-made causes probably do the most damage. There are many man-made causes. Pollution is one of the biggest man-made problems. Pollution comes in many shapes and sizes. Burning fossil fuels is one thing that causes pollution. Fossil fuels are fuels made of organic matter such as coal, or oil. When fossil fuels are burned they give off a green house gas called CO₂. Another major man-made cause of Global Warming is population. That means more methane because there will be more burning of fossil fuels, and more agriculture. Another source of methane is manure. Because more food is needed we have to raise food. Animals like cows are a source of food which means more manure and methane. Another problem with the increasing population is transportation. More people means more cars, and more cars means more pollution. Since CO₂ contributes to global warming, the increase in population makes the problem worse because we breathe out CO₂. Table 5.1 shows the world CO₂ emission.

Table 5.1: World CO₂ Emission By Source

Sources	World Carbon Dioxide Emission	
	Millions Metric Tons	In percentage
Land use changes	4,000	15.5
Gas fuels	6,829	14.5
Liquid fuels	9,050	34.2
Solid fuels	5,588	32.5
Cement manufacture	627	2.4
Gas flaring	249	0.9
Total	26,443	100

Source: Based on World Resources Institute (1996).

Table 5.2 shows the sources of global methane emission. Agriculture and livestock together account for a little over 55 per cent.

Table 5.2: Sources of Anthropogenic Methane Emission

Sources	World Emissions Millions Metric Tons	In percentages
Solid waste	43	16
Coal mining	36	13
Oil and Gas Production	44	16
Wet Rice Agriculture	69	26
Livestock	81	30
Total	210	100

Source: Based on World Resources Institute (1996).

Table 5.3 shows the carbon emission of various fuels per unit of energy produced. Coal is about 67 per cent more carbon-intensive per unit of energy than natural gas.

Table 5.3: Carbon Content of Fossil Fuels

Fuel	Tons Carbon Emitted Per Million BTU
Coal	25
Oil	20
Natural gas	15

BTU: British Thermal Unit

Source: Based on Watson *et al.*, (1996), Box B-2, P. 80.

The study based on world Resource Institute, showed that different regions contribute different amounts of different greenhouse gases. Europe and North and Central America account for 58 per cent of CO₂ from industrial sources, but only 32 per cent of methane. Asia contributes 32 per cent of industrial CO₂ and 50 per cent of methane. Other data showed that Europe plus North and Central America accounted for 58 per cent of CO₂ from deforestation, Asia 32 per cent and South

Introduction

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° Celsius (1.1° Fahrenheit) in the 20th century. Global warming is an imminent catastrophe with irreversible consequences. The Kyoto Protocol was adopted in Kyoto, Japan on 11th December 1997 and entered into force on 16th February 2005. 180 countries have ratified the treaty to date. It aims to reduce the green house gas emissions by 5.2 per cent against the 1990 levels over the five year period 2008-12. Developed countries are categorised under Annex 1 countries and are legally bound by the protocol while the developing nations, categorised as Non Annex 1 countries, which ratify the protocol are not legally bound by it. The Kyoto Protocol has three mechanisms: (i) Joint Implementation (JI), (ii) Clean Development Mechanism (CDM) and (iii) International Emission Trading (IET).

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Rising temperatures and sea-levels in other parts of the world like United States and the U.K., but actually India is one of the most vulnerable countries when it comes to effects of global warming. India has a vast coastal line and the rising sea levels caused by global warming will cause an ecological disaster. This is according to a 1989 United Nations Environment Programme study. The uncertainties of global warming include emission rates for the various gases and their atmospheric lifetimes and concentrations; the effects of such concentrations on temperature, precipitations, and climate, especially at the regional, national and local levels; and the effects of climate change on a wide range of variables of economic significance including agriculture, sea level changes, human health, biodiversity, and basic ecological and environmental system.

Causes of Global Warming

Almost 100 per cent of the observed temperature increase over the last 50 years has been due to the increase in the atmosphere of greenhouse gas concentrations like water vapour, carbon dioxide (CO_2), methane and ozone. Greenhouse gases are those gases that contribute to the greenhouse effect. The largest contributing source of greenhouse gas is the burning of fossil fuels leading to the emission of carbon dioxide. Greenhouse gases in the atmosphere act like a mirror and reflect back to the Earth a part of the heat radiation, which would otherwise be lost to space. The higher the concentration of green house gases like carbon dioxide in the atmosphere, the more heat energy is being reflected back to the Earth. The emission of carbon dioxide into the environment mainly from burning of fossil fuels like oil, gas, petrol, kerosene, etc., has been increased dramatically over the past 50 years. Global warming causes in two ways.

Natural Causes

Natural causes are causes created by nature. One natural cause is a release of methane gas from arctic tundra and wetlands. Methane is a greenhouse gas. A greenhouse gas is

Effects of Global Warming

(i) Destruction of Eco-systems

Changing climatic conditions and dramatic increases in carbon dioxide will put our ecosystems to the test, threatening supplies of fresh water, clean air, fuel and energy resources, food, medicine and other matters we depend upon not just for our lifestyles but for our survival. Forecasts of famine, war and death paint a dire picture of climate change on our planet. Scientists are researching the causes of these changes the vulnerability of Earth not to predict the end of days but rather to help us mitigate or reduce changes that may be caused by humans. The use of more energy-efficient and sustainable resources and the adoption of other green ways of living, we may be able to make some impact on the climate change process.

(ii) Disease

Warmer temperatures along with associated floods and droughts are encouraging worldwide health threats by creating an environment where mosquitoes, ticks, mice and other disease-carrying creatures thrive. The World Health Organization (WHO) reports that outbreaks of new or resurgent diseases are on the rise and in more disparate countries than ever before, including tropical illnesses in once cold climates such as mosquitoes infecting Canadians with West Nile virus. While more than 150,000 people die from climate change-related sickness each year, everything from heat-related heart and respiratory problems to malaria are on the rise. Global warming fosters increased smog which is linked to mounting instances of asthma attacks and also advances weed growth, a bane for allergy sufferers.

(iii) Storms and Floods

During the last few years, both the United States and Britain have experienced extreme storms and flooding, costing lives and billions of dollars in damages. Between 1905 and 2005 the frequency of hurricanes has been on a steady ascent. From 1905 to 1930, there were an average of 3.5 hurricanes

per year; 5.1 between 1931 and 1994; and 8.4 between 1995 and 2005. In 2005, a record number of tropical storms developed, and in 2007, the worst flooding in 60 years hit Britain.

(iv) Heat Waves

The deadly heat wave that swept across Europe in 2003, killing an estimated 35,000 people, could be the harbinger of an intense heat trend that scientists began tracking in the early 1900s. Extreme heat waves are happening two to four times more often now, steadily rising over the last 50 to 100 years, and are projected to be 100 times more likely over the next 40 years. Experts suggest continued heat waves may mean future increases in wildfires, heat-related illness and a general rise in the planet's mean temperature.

(v) Shrinking Glaciers

In the span of a century, glaciers in Montana's Glacier National Park have deteriorated from 150 to just 35. And the Himalayan glaciers that feed the Ganges River, which supplies drinking and irrigation water to 500 million people, are reportedly shrinking by 40 yards (37 meters) each year.

(vi) Rising Sea Level

Hotter temperatures mean ice glaciers, sea ice and polar ice sheets is melting, increasing the amount of water in the world's seas and oceans. Scientists are able to measure that melt water from Greenland's ice cap directly impacts people in the United States: The flow of the Colorado River has increased six fold. And scientists project that as the ice shelves on Greenland and Antarctica melt, sea levels could be more than 20 feet (6 meters) higher in 2100 than they are today. Such levels would submerge many of Indonesia's tropical islands and flood low-lying areas such as Miami, New York City's Lower Manhattan and Bangladesh.

India's Initiatives

- Signed UNFCCC on 10th June 1992.
- India ratified the Kyoto protocol.
- India has a National Action Plan on Climate Change.

- National Solar Mission.
- National Mission for Enhanced Energy Efficiency.
- National Mission on Sustainable Habitat.
- National Water Mission.
- National Mission for Sustaining the Himalayan Ecosystem.
- National Mission for a 'Green India'.
- National Mission for Sustainable Agriculture.
- National Mission on Strategic Mission on Climate Change.
- India has a well developed policy, legislative regulatory and programmatic regime.
- For promotion of Energy efficiency, renewable energy, nuclear power, fuel switching, energy pricing reform addressing GHG emission.

Conclusion

The Green house gases are the main culprits of the global warming. The green house gases like carbon dioxide, methane, and nitrous oxide are playing hazards in the present times. These green house gases trap heat in earth's atmosphere and thus result in increasing the temperature of earth. The excessive emission of these gases is the major cause of global warming. India's mean surface air temperature has increased by about 0.40c during the past century. Studies based on climate model results have indicated that a 30 to 60 per cent increase in tropical cyclone activity in the north Indian Ocean may occur over the next century. This would pose and serious problems as large areas in the coastal regions have a dense population associated with fertile delta areas.

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