

Global Warming: Causes and Concerns

Brahmanand Mohanty

Regional Adviser for Asia, French Environment and Energy Management Agency (ADEME), Visiting Faculty, Asian Institute of Technology (AIT)

Contact e-mail: mohanty@vsnl.com

ABSTRACT

The climate change that we all are witnessing today is the outcome of the alteration in the energy balance of the climate system due to changes in the atmospheric concentrations of greenhouse gases (GHGs) and aerosols, land cover and solar radiation. Human activities since the beginning of the industrial revolution in 1750 have contributed largely to the rapid growth of global atmospheric concentrations of long-lived GHGs such as CO₂, CH₄ and N₂O (due to fossil fuel use, changes in land-use and agriculture). It is very likely that most of the observed increase in global average temperatures since the middle of 20th Century is linked with the observed increase in anthropogenic GHG concentrations. Based on the assessments of the Intergovernmental Panel on Climate Change (IPCC), these human activities have not only influenced the increase of the average earth temperature, but also contributed to the risks of heat waves, changes in wind patterns, large-scale changes in land precipitation in some areas and droughts in others.

Anthropogenic warming over the last three decades is feared to have contributed to observed changes in many physical and biological systems. Natural systems in the ocean and on land are being affected by regional climate changes, such as enlargement and increased number of glacial lakes, increasing ground instability in permafrost regions and rock avalanches in mountain regions, and changes in some Arctic and Antarctic ecosystems. It is also strongly affecting biological systems on the earth, mainly in the form of earlier timing of spring events (earlier greening of vegetation, bird migration and egg-laying). Also, marine and



freshwater biological changes have been observed as a result of rising water temperatures and related changes in ice covers, salinity, oxygen levels and circulation.

Other effects of regional climate changes are likely to be on agricultural and forestry management at higher latitudes of the Northern hemisphere, some aspects of human health, losses of coastal wetlands and mangroves and increase damage from flooding in coastal areas.

Studies show that the current climate change mitigation policies and related practices will result in continued GHG growth over the next few decades and induce much greater changes in the global climate system than those observed during the 20th century, resulting in adverse impacts on systems, sectors and regions. As far as Asia is concerned, fresh water availability, particularly in large river basins, is projected to decrease. Densely populated regions in coastal areas will be at greater risk due increased flooding. Countries experiencing rapid urbanisation, industrialisation and economic development are likely to face greater pressure on natural resources and the environment. Last but not least is the threat of human health associated with the projected changes in the hydrological cycle.

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Key words: *Global Warming* *Climate Change* *Causes*
Impacts *Asia*

(Footnotes)

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