

## CLIMATE CHANGE AND ITS IMPACTS

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Climate change has emerged as one of the biggest challenge before us in the recent history. The atmospheric concentration of green house gases such as carbon dioxide, methane and nitrous oxide have significantly increased since the beginning of industrial revolution and other development activities. This is mainly due to anthropogenic activities, such as burning of fossil fuels land use change by clearing forests for agriculture. As important storehouses of carbon globally, forests play a critical role in influencing the Earth,s climate. Forests plants and soils drive the global carbon by sequestering carbon dioxide through photosynthesis. The forest provide many important benefits to the people and if there is significant warming the capacity of ecosystems to adapt will be exceeded, which will result in to negative consequences on human society and also an increased risk of extinction of number of flora and fauna species.

Countries across the globe have realised the potential consequences of climate change on the lives of flora, and fauna and human societies. There is increased evidence that climate change is stressing forests through higher mean annual temperatures and causing altered precipitation patterns and more frequent and extreme weather events. Also, the forest ecosystems through

trapping the atmospheric carbon in gaseous form and converting and storing it in solid form as plant body and biomass, play a major role in adapting and mitigating to global climate change. We need to identity, evolve and strengthen systems to recognize this contribution from forest ecosystems. When destroyed or even harvested and burned, forest can become sources of the major green

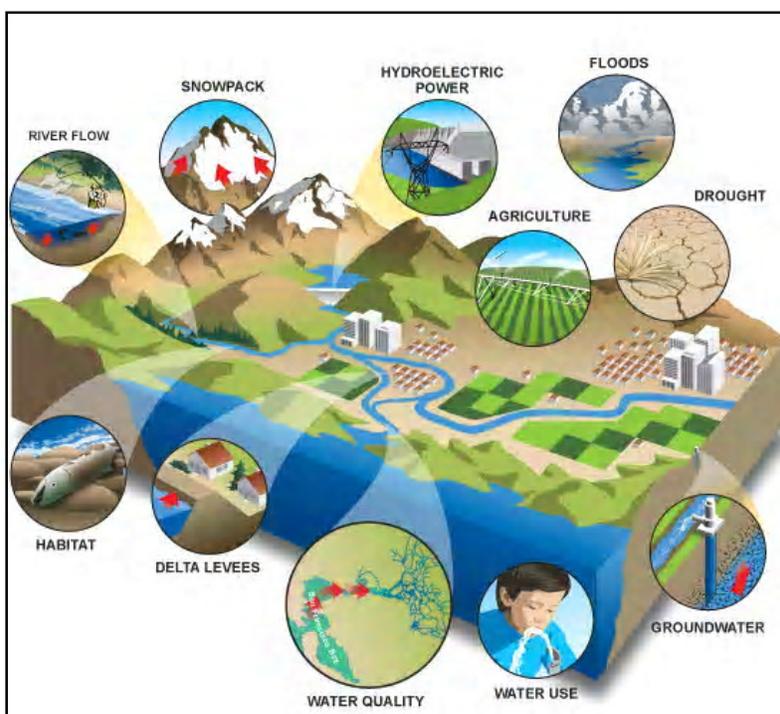
house gas – carbon dioxide. The destruction of forests not only releases carbon from the vegetation biomass but also from the soil which have significant carbon in a dynamic ecological relationship.

Climate change is referred to any significant changes in the average weather conditions that a given region experiences. Average weather may include average temperature, precipitation and wind patterns. It involves changes in the variability or average stats of the atmosphere over durations ranging from decades to millions of years. These changes are known to be caused by dynamic processes on Earth, external forces including variations in sunlight intensity and more recently by human activities. It reflects variations within the Earth,s atmosphere, process in other parts of the Earth such as

ocean and ice caps and the effects of human activity. The external factors that can shape climate are often called climate forcings and include such processes as variations in solar radiations and green house gas concentrations.

The Kyoto Protocol was adopted in 1997 by the countries which were parties to the United Nations Framework Convention on Climate Change (UNFCCC). The Convention seeks to stabilize green house gas concentration in the

atmosphere at a level that would minimise interference with the climate system. India ratified the protocol in August 2002. Under the protocol, India is not required to reduce emission of green house gases, whereas basically the developed countries were required to reduce emissions by an average of 5.2 per cent below 1990level by 2012. The adverse effects of climate change on the ecosystems,



livelihood security and potential disasters are visible now. There is growing scientific evidence on climate change, like:

- Numerous long -tem changes in the climate have been observed including extreme weather like droughts, heavy precipitation, heat wave and intense tropical cyclones;

- Average Arctic temperature increased at almost twice the global rate in the past 100 years;

- Snow cover has declined by some 10 per cent in the mid and high latitudes of the Northern Hemisphere since the late 1960s and almost all mountain glaciers in non-polar regions retreated during the last century with overall volume of glaciers in Switzerland decreased by two-thirds;

- Increased shifts in the natural world including physical processes and species and communities ;

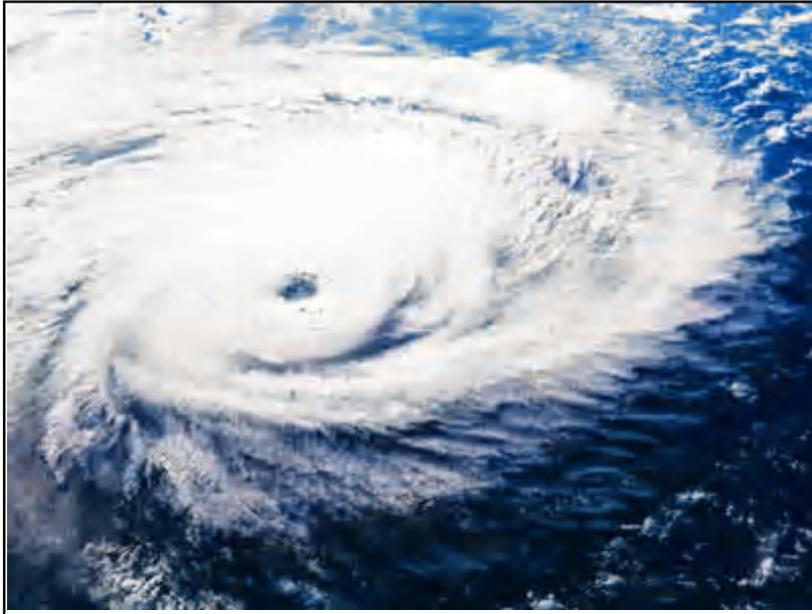
- Forests are affected by increased forest diseases and pest infestations, forest dispersions and shifting, rising tree-lines, increased forest fires etc.,

- Butterflies, dragonflies, moths, beetles, and other insects are now living at higher latitudes and altitudes, where previously it was too cold to survive.

Changes in global and regional climate patterns represent one of the greatest threats to our environment in the recent times. With its fragile ecosystem, diverse terrain, rich biodiversity and long coastline, India is also

vulnerable to climate change variations. India is likely to suffer from long term adverse impacts on climate change, such as rise in mean winter temperature, decline in summer rainfall leading to unfavorable consequences for agriculture, drinking water supply and hydro power generations; melting of glacial ice that can drastically reduce water flow in the rivers (in the long run); reduction in the duration of crop

cycles shortening of the grain fill period that could substantially reduce agricultural productivity and output; sea level rise that can effect biodiversity rich coastal wetlands, increased flooding, erosion and salt intrusion in the deltas, increase in vector borne diseases due to rise in temperature and humidity level.



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