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IMPACT OF CLIMATE CHANGE IN INDIA

Mrs. Desai Madhura Babasaheb
U.G.C. Teacher Fellow, Dept. of Economics,
Shivaji University, Kolhapur

Introduction

India's economy is largely dependent on agriculture and is already under stress due to its increasing population, and the resulting increase in demand for energy, fresh water and food. This situation will worsen with the effects of global warming and Climate-related disasters. Climate Change will cause widespread misery and huge economic losses to India, adversely affecting public health, food security, agriculture, water resources and biodiversity. Global Warming and the resulting Climate change is a threat to mankind. More frequent and powerful cyclones and hurricanes, more frequent and intense floods and droughts are clear indications that climate change has already begun.

Meaning of Climate Change:

"Climate change is a change in the 'average weather' that a given region experiences. When we speak of climate change on a global scale, we are referring to changes in the climate of the Earth as a whole, including temperature increases (global warming) or decreases, and shifts in wind patterns and precipitation"

Objectives:

The present study is undertaken with the following objectives:

- To understanding the concept of climate change
- To study understanding the impacts of climate change in India.
- To draw conclusion.

Some of the Most Obvious Effects of Climate Change:

Although scientific research has been carried out on the impacts of climate change on India, some of the most obvious effects are listed below

Increase in Temperature:

Scientist from the Indian Institute of Technology (IIT), New Delhi, already report that surface air temperatures over India are going up at the rate of 0.4°C per hundred years, particularly during the post-monsoon and winter season. Using models, predict that mean winter temperatures will increase by as much as 3.2°C by 2050 and 4.5°C by 2080, due to GHGs. It also predicts that the summer temperatures will increase by 2.2°C by 2050 and 3.2°C by 2080. However, studies show that the heating up of India will not be uniform across the country.

Effect on Monsoon:

India is heavily dependent on the monsoon – to meet its agriculture and water needs, and for protecting and propagating its rich biodiversity. Scientists of IIT, Delhi warn that India will experience a decline in monsoon rainfall over the north and central plains of India by 2050 because of the general weakening of the monsoon. This is because there will be a decrease in the land-sea thermal gradient. There will also be a significant decline in surface runoff in these plains leading to less water in the rivers. However, it is predicted that the semi-arid regions of western India are expected to receive higher than normal rainfall.

Effects on Water Resources:

Relatively small climatic changes can cause large water resource problems, particularly in arid and semi-arid regions such as northwest India. This will have an impact on agriculture, drinking water, and on generation of hydroelectric power, resulting in limited water supply and land degradation. Rainfall may decline by 5 to 25 per cent during winters, causing droughts during dry summer months. The onset of the summer monsoon over central India could vary in future. If rainfall decreases, water availability will decrease across the country.

Effect on Agriculture:

Increased temperatures will impact agricultural production. Agricultural productivity can be affected in two ways: one, directly, due to changes in temperature, and two, indirectly, through changes in soil, distribution and frequency of infestation by pests, insects, diseases or weeds. Agriculture will be adversely affected not only by an increase or decrease in the overall amounts of rainfall, but shifts in the timing of the rainfall. For instance, over the last few years,

the Chhattisgarh region has received less than its share of pre-monsoon showers in May and June.. Agriculture will be worst affected in the coastal regions of Gujarat and Maharashtra, where agriculturally fertile areas are vulnerable to inundation and sanitization. Rise in surface temperature will create more conducive conditions for pest infection, which is already a major constraint in achieving higher crop production in India, and hence negatively affecting agriculture.

Impact on Human Health:

Climate change simulation models suggest that a rise in temperature and change in humidity will adversely affect human health in India. A warmer and wetter India will see a rise in heat-related and infectious diseases. More people will die due to heat waves. Heat stress could result in heat cramps, heat exhaustion, heat stroke and damage physiological functions, metabolic processes and immune systems. Increased temperatures can increase the range of vector borne diseases such as malaria, dengue fever, yellow fever and several types of encephalitis, particularly in regions where minimum temperatures currently limit pathogen and vector development. Global warming will increase the incidence of respiratory and cardiovascular diseases in arid and semi-arid parts of India. Cyclones and floods will also cause rise in illnesses, diseases, injuries and loss of life.

Effect on Ecosystems and Biodiversity:

As temperatures rise, species which cannot adapt will go extinct, while others will migrate to new locations under changing climatic conditions. Increase in temperatures will result in shifts of lower altitude tropical and subtropical forests to higher altitude temperate forest regions, resulting in the extinction of some temperate vegetation types. Severe coral bleaching will occur all along the Indian coast as a result of seawater warming. Coral reefs are threatened by changes in temperature, rising sea levels and increased concentrations of carbon dioxide in the atmosphere.

Effect on Coastal Low Lands and Deltas:

A trend of sea level rise due to thermal expansion of seawater in the Indian Ocean is expected to inundate low lying areas. Beyond actual inundation, rising sea levels will also put millions of people at greater risk of flooding and displace a large number of people. Increased seawater percolation may further reduce freshwater supplies. Coastal erosion will increase substantially. Loss of coastal mangroves will have an impact on fisheries and coastal fishing communities will be severely affected.

Conclusion:

Climate change is the long-term alteration in the average weather conditions for a particular location. These situations will the effects of global warming and climate-related disasters. Climate Change will cause widespread misery and huge economic losses to India, adversely affecting public health, food security, agriculture, water resources and biodiversity. The direct impacts of climate change include rising temperatures, increasing precipitation levels, and sea-level rise. These, in turn, have an impact on the natural ecological systems, agriculture, human health, soil erosion, water resource use, power generation, tourism, industry, and infrastructure. There is no agreement regarding the magnitude and rate of occurrence of these impacts. Climate change will affect the agricultural yield directly through changes in temperature and precipitation, and indirectly through changes in soil quality, pests, and diseases.

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