

## An Assessment of the Impact of Climate Change in India

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National economy and life of millions of poor largely related to climate sensitive natural resource base and a densely populated 7500 Km long low-lying coastline make India highly vulnerable to the impacts of climate change. Significant changes in the amount, intensity and seasonality of rainfall and extremes in temperature observed in different states are serious challenges to the securities in food, water and energy. Vagaries in monsoons and associated setbacks in agriculture that represents 35% GDP affect economy and rural life, leading to social issues like migration and spread of terrorism. Impact on forest affects the biodiversity, economy and life of tribals. Water availability in certain states has been falling sharply due to the changes in the amount as well as the seasonality of rainfall. Increase in rainfall intensity erodes topsoil in the Western Ghats Mountain and reduces the streamflow and reservoir capacity. Retreat of the Himalayan glaciers may add to the severity of hydrological extremes in the entire north India in the coming years. Irregular onset of monsoon and change in seasonality have already affected the plant biodiversity in the southern state of Kerala. Some seasonal plants became extinct because of the prolonged dry season. Almost all parts of India are increasingly becoming prone to floods or droughts. Dry-lands are potentially threatened by desertification. Changes in the frequency, intensity and track of cyclones and rising sea level are of serious concern in the coastal zones. Decreasing trend in fish catch in the southern coasts is linked to the changes in coastal circulation, SST and upwelling patterns. Coral environments also suffer from this. Cold waves and heat waves are becoming severe, extending to new regions and resulting in casualties. New viruses and vectors spread fatal deceases, expanding geographical extent. Climate change is likely to retard the present economic growth, because of the massive investment required for adaptation, mitigation and post-hazard recovery and resettlement measures. Providing basic necessities such as water, food and power, maintaining public health, implementing protective measures in the coastal zones and modifications in the urban infrastructure, especially in the coastal megacities become expensive. Impact of extremes on rails, roads and building are also becoming a major issue in the coastal zones and urban centres. Industrial sector is facing a threat from the falling reliable supply of water and power. However, procedure for the implementation of the strategies to mitigate the climate change impact and of the policy for the adaptation to climate change is slow. There are several hurdles for this, including various ecological, socio-economic, technical and political issues, alterations of the physical environment, inability of certain habitats and species to adapt to a new environment, abject poverty, lack of awareness, and the inefficient administrative mechanism. A comprehensive assessment of the shifts in regional climate and the impact of climate change on different facets of life in India, and of the current strategies and polices to face such challenges is made in this study. Suggestions for the improvement of the climate policy and adaptation strategy have been provided.