



“ ADAPTING TO THE IMPACTS OF CLIMATE CHANGE ”

THEME LEAD

Ms Suruchi Bhadwal

Associate Director, Earth Science and Climate Change, TERI

CO-CHAIRS

Mr Uday Khemkha

Vice-Chairman, SUN (Europe) Limited

Mr M K Singhi

Group CEO & Whole Time Director-Cement

INTRODUCTION

The 20th century has observed changes in the climate including an increase in overall global mean temperatures, change in humidity levels, and varying precipitation patterns. These changes in the climate are attributed to human induced change in the concentrations of greenhouse gases in the atmosphere since the pre-industrial era. Along with the gradual changes happening in the climate, the number of abrupt and extreme events has intensified and increased almost exponentially. Of the total 890 events in 2013 and early 2014, majority of the loss events are of a hydro-meteorological and climatological nature. The losses from these events as fatalities and overall losses are \$125 billion compared to \$135 billion when considering all types of events. Most of these events have been concentrated over the Asian, North American, Central American, Caribbean, and the European region. While the fatalities and overall losses are the highest in Asia amounting to 85 per cent and 50 per cent, respectively, the amount of insured losses are the least after Africa and Latin America. Given the rate at which greenhouse gas emissions have been continuing to increase, there are changes in the climate projected over the 21st century and beyond. Globally, the Intergovernmental Panel

on Climate Change (IPCC) has been bringing out conclusive reports and findings since the 1990s updating the science and its understanding on this global issue. Recent scientific reports from the IPCC have concluded that the warming of the climate system is unequivocal and that the world is moving towards a warmer and extreme climate. Such trends hold true even for India where significant warming trend of 0.51 °C/100 years has been observed for all Indian annual mean temperatures over the period 1901–2007. Many scientific publications and government reports have also conclusively established an increasing trend of extreme climate events and

KEY QUESTIONS

- How do we raise awareness on climate risks and corresponding actions by the corporates?
- How can corporates account for the risks of a changing climate into their planning process? What kinds of assessments are needed to assist them in this process or sector-specific/regional assessments?
- What measures can be identified to counter the risks which would be specific to the geographical region and the type of the industry and its value chain dependency?
- How can corporate India assist in Climate Proofing of current infrastructure, policies, and plans? Do we need a mission mode and if yes, how should that be structured?

increasing heat and cold waves in India. Also of the 10 deadliest events recorded in 2013, three were reported in India including floods and flash floods in the states of Uttarakhand, Himachal Pradesh, Uttar Pradesh, and Jammu and Kashmir; heat waves in Andhra Pradesh, Odisha, Rajasthan, and Assam; and floods in Bihar. However, the insured losses are pretty negligible while the risks are portrayed to be high. The future projections of climate over India also indicate a warming trend. Significant rise of annual mean temperatures (~4 °C for 2071–98 period relative to 1961–90) along with substantial rise in day and night temperatures with increase in frequency and intensity of temperature and rainfall extremes have been projected. While there are associated uncertainties in the various simulations, there is high degree of confidence in the nature of change expected in temperatures and precipitation patterns. These changes in the climate have direct and indirect impacts on a number of sectors, including implications on agriculture, water resources, forests and biodiversity, and health and infrastructure, both in inland and coastal areas. These changes have huge implications on businesses located in sensitive areas for instance, in case of close proximity to exposed coastlines, extreme events causing damage to infrastructure, agri-businesses, power generation including thermal and hydropower generating units, pose challenges to water demand and supply for competing needs of agriculture and industry (water intensive units).

AGRICULTURE

Overall yields of crops are projected to be affected due to increase in temperatures. Changes in the onset and withdrawal of the monsoons, overall rainfall and its intensities, extreme events, and a host of other factors including humidity and soil moisture availability would also have an impact on the overall crop production. Infestation by pests and diseases due to conducive environment created due to a warm and humid climate may further have a negative influence on the yields. Industries dependent on raw material from the field are particularly sensitive to such fluctuations in productivities and overall production.

WATER RESOURCES

Changes in rainfall patterns would affect the overall water situation across various regions. There may be a surplus in some parts and a deficit in others, overall affecting the surface water availability and ground water recharge. All water-intensive industries are sensitive to such changes.

FORESTS AND BIODIVERSITY

Phenology may be affected; may affect industries dependent on Non Timber Forest Produces (NTFPs).

HEALTH

Change in the climate may affect the spread of vector-borne diseases. Also, water related and water-borne diseases may get aggravated. Direct exposure to health from extremes may have an effect.

INFRASTRUCTURE

Damage to infrastructure during floods, flash floods has been reported throughout the country. These incidents are likely to increase over future time periods. Infrastructure losses in these areas are huge and industries located in these areas are particularly sensitive.

SUPPORT/LEVERAGE FROM EXISTING GOVERNMENT AND CORPORATE INITIATIVES

Adapting to the impacts of climate change is a necessity given that the climate has been rapidly changing since the pre-industrial era. While all losses cannot be overcome, there is a possibility of reducing the losses and minimizing overall impacts. In 2008, India has set up the Prime Minister's Council on Climate Change to formulate national and sub-national actions on climate change. It released its National Action Plan on Climate Change (NAPCC) in June 2008, which outlines eight National Missions as priority areas of work on climate change with a focus on both mitigation and adaptation. The eight missions are to address the challenges of climate in the water sector, agriculture sector, the forestry sector, sustainable habitat, energy efficiency area, and solar energy. While detailed plans of implementation had been put in place for each of these missions with a lead Ministry responsible for its effective execution, State level sub-national plans had also been developed. The State Action Plans on Climate Change (SAPCCs) were developed to contextualize action on climate keeping in mind the local context. Besides, there are several policies and plans of the Government of India that help leverage adaptation actions for instance in case of watershed development and management, crop diversification, subsidies on efficient irrigation systems, promotion of artificial recharge, and rainwater harvesting, declaration of protected zones and participatory forest management, coastal zone regulation, all Disaster Risk Reduction (DRR) initiatives, etc. However, while the country does have a wide span of policies and schemes and institutional systems in place to leverage action in these areas, effective implementation and delivery of results has been an issue. The role of the corporate sector thus becomes vital in leveraging action in areas of direct/indirect interest considering its entire value chain and otherwise as Corporate Social Responsibility (CSR) for pre- and post-relief operations during disasters. There have been examples of corporate sector contributions in the aftermath of the devastating Super Cyclone in Odisha in 1999, Bhuj earthquake in 2001, Indian Ocean Tsunami in 2004, and cloudburst in Uttarakhand in 2013. Corporates have been the major source of supplies including food supplies, medical aid, shelters and restoration involved in disaster management. So, there is tremendous scope for government and corporate engagement to promote proactive adaptation that while securing businesses may also benefit societies and promote well-being. To begin with, corporates can engage in undertaking regional assessments at the State level to better understand the risks to a changing climate and how it may get affected. This may further assist them in their policy, planning, and better management of available resources.