



# INFORMATION SERIES CLIMATE CHANGE



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**C**limate change is occurring due to global warming and its effects. The climate back in the 1800s was different than it is today. Anthropogenic activities like deforestation, pollution, and other harmful effects of industrialization are leading to a rise in Earth's temperature, changing rainfall patterns, droughts, floods, earthquakes, extreme weather conditions, melting of glaciers, etc. collectively known as climate change. NASA scientists have recorded the warmest years on earth's surface in the past 20 years. The last 5 years have been recorded as the warmest years in centuries. On average, because the earth is warming up at different rates in different parts of the world, global air temperatures near the earth's surface have risen about 2°F in the past 100 years.

## IMPACT OF CLIMATE CHANGE ON INDIA

**High temperature** - Unusual and unpredictable spells of heat are to be expected more frequently causing extreme hot conditions in the western and southern parts of India having a considerable impact on agriculture.



**Changing rainfall patterns** - Rainfalls have become highly unpredictable due to rising temperatures. Changing rainfall patterns can cause droughts in some parts of India and floods in other parts.

**Groundwater**- More than 60% of India's agriculture depends on groundwater, 15% of which has already been over-exploited. Groundwater levels are expected to be depleted further owing to the increasing population, affluent lifestyles, rapid growth of industries, water, and soil pollution.



**Melting glaciers** - Most Himalayan glaciers have been falling back from the past few years. The melting of glaciers and loss of snow cover will cause instability and threaten the glacier-fed rivers like Indus and Brahmaputra, with increasing water flow during spring and subsequent reduction during winters. This will affect irrigation and the amount of food produced in their basins, it will also significantly affect the lives of millions of people.

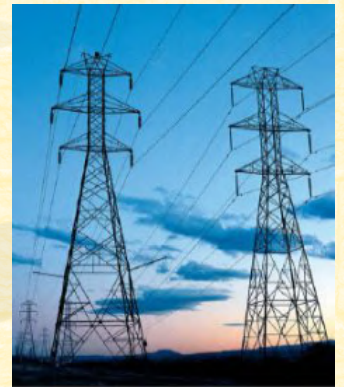


**Rising sea-level** - India is close to the equator, the sub-continent region will witness high rising sea-levels. Mumbai and Kolkata, both being densely populated cities are prone to tropical cyclones, riverine flooding, the intrusion of saltwater in coastal areas leading to health problems, degradation of groundwater, and agriculture.



**Agriculture and food security** - World intake of rice and wheat is expected to increase due to the increasing population, need for biofuels, etc. even without climate change. Seasonal water scarcity, changing rainfall patterns, droughts, floods, saline water intrusion, and depletion and pollution of groundwater will only worsen the crop yield.

**Energy security**- The two dominant energy-producing sectors in India are hydropower and thermal power generation, both of which require adequate water supplies to function. Effect on the flow of rivers and water level poses a major challenge to hydropower plants and might result in any calamity due to physical damage to dams and reservoirs. Increasing temperature and decreasing water availability will create major challenges and risks towards thermal power generation.



**Water security** - Increasing population, urbanization, increasing energy demands, need for water for irrigation purposes, etc is imposing a major challenge to fulfill water requirements for future generations. Many parts of India are facing water shortage periodically or are facing a water crisis. Studies show that water security is under threat in Central India, Mountain ranges of the Western Ghats, and North-Eastern states of India.

**Health** - Water and soil pollution, extreme weather conditions, droughts, floods, and decreased crop yield is going to increase poverty and malnutrition in India. Extreme weather conditions like heat-waves during summer and chilling weather conditions during winter are going to increase the mortality rate. Floods and water pollution give rise to many water-borne diseases like diarrhea and cholera.



**Migration and conflict** - People migrate to other regions from disaster-affected or other degraded areas, this causes a shortage of food, water, shelter, and other resources to the native people. Climate change impacts on food and livelihood can increase the number of climate refugees. Increasing demand for water consumption is leading to conflicts among countries sharing the same rivers as The Indus and Ganges-Brahmaputra-Meghna basin are major trans-boundary rivers.



## IMPACT OF CLIMATE CHANGE ON MSMEs

The above-mentioned impacts climate change affects MSMEs by making it difficult for them to adapt to these changes and recover from such natural calamities like floods, droughts, and earthquakes. MSMEs' vulnerability is compounded to the fact that many of them operate outside the formal sector. Climate change is not only a major environmental factor but it severely affects social, economical, and business issues as well. Climate change majorly affects two MSME-dominated areas i.e. metalworking and textile. Indian MSMEs' has a direct impact on their infrastructure, buildings, machinery, and manufacturing. Ranging from extremely hot days to extremely cold days and varying monsoon conditions which effects energy demands, supply chain, and raw material availability and prices. Indian MSMEs' run on low technological facilities and resources so it is difficult for them to rapidly recover from any calamity. They need time to get used to new regulations and market demand, changes in prices and financing, and effects on stakeholders and employees.

**High temperature** - Reduced productivity of workers and increased energy demands like cooling apparatus in summers for workers and manufacturing processes.



**Lack of freshwater** - The industrial need for freshwater is going to triple between 2000-2025. This is going to affect the cost and productivity of companies and will cause reputational damage to highly water-intensive industries.

**Price hike of energy** - Energy requirements in India is going to triple between 2006-2025. Higher and lower temperatures are going to require energy consumptions both for the employees and the machinery. Energy prices are likely to show greater volatility and are going to increase in the next decades.



**Insufficient infrastructure** - MSMEs contribute to approximately 70% of the industrial pollution, leading to environmental stress. Many MSME units have poor infrastructure, insufficient road, energy, and water supply access.



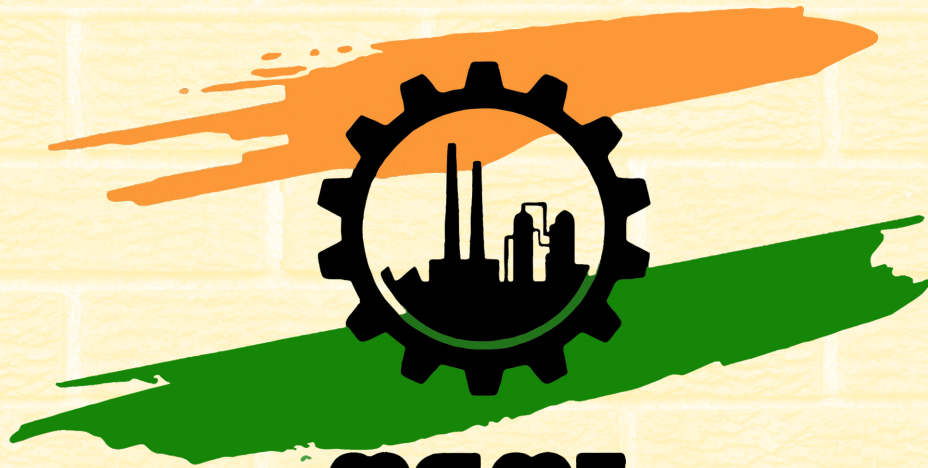
## WHAT CAN BE DONE TO OVERCOME THESE CHALLENGES?

- Effective water treatment facilities including technologies to reduce and reuse wastewater. Investments should be made to increase water storing capacity during the springtime when rivers have adequate water.
- City and town planning projects should be introduced to increase the use of solar energy and decrease dependence on energy obtained by the burning of fossil fuels.
- Climate-related insurance for crop loss and perished goods.
- Crop-diversification and introduction of drought-resistant crops to minimize the use of water for irrigation and retain the cultivational properties of soil. The use of pesticides, herbicides, and other chemicals should be reduced to protect groundwater from getting polluted.
- Training and education should be provided to the employees to create awareness regarding climate change and ways to combat it.
- Disaster-response services should be initiated to replace damaged equipment and clearing up of affected areas.
- Improvements in hydro-meteorological systems for weather forecasting and the installation of flood warning systems can help people move out of harm's way before a weather-related disaster strikes.
- Applications should be built for mobile devices concerning climate-related services.

## BUSINESS OPPORTUNITIES FOR MSMEs IN INDIA RESULTING FROM CLIMATE CHANGE

- Building various climate-proofing products like insulation and improved roofing.
- Designing software applications for advanced weather forecasting and devices concerning climate-related services.
- New construction materials, technologies, processes and approaches to design and plan better infrastructure.
- Risk management and weather information services.
- Medicines and healthcare depending on varied geographical conditions.
- Advisory, legal and consultancy services contributing to resilience building.





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We understand the importance of MSMEs in the growth of the GDP of our country. We are single window one stop solutions provider helping you in:

- Simplifying the process of organization and coordination of businesses for MSMEs.
- Providing technical support and simplifying the process ensuring ease of doing business.
- Provide assistance through effective and efficient service collaboration by category experts.

At MSME Business Forum we go beyond advising MSMEs to provide them with expert solution towards Fund Raising, MSME IPO, Govt. Schemes, Trade Finance and Structuring, IT Solutions, Compliance / Audit/ Valuations/ Certifications, Human Resource & Training, Legal assistance, Marketing, Branding and Organizing Events, and International JV/Tie-Ups/ Export Promotions.

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