

General Studies-3; Topic- Conservation, environmental pollution and degradation.

Global Warming and its Effect on India

1) Introduction

- India Meteorological Department (IMD) said 2018 was the sixth warmest year on record, a result of the global warming trend.
- It said, the average temperature over India is “significantly above normal”.
- The IMD said that 11 of the 15 warmest years were during the recent past fifteen years (2004-18).

2) Present Trend

- The trends of recent years are part of the “global warming” trend.
- The rate of increase of temperatures over India is almost similar to the global average.
- Mean temperature during the monsoon and post-monsoon seasons were also above normal.
- Temperatures are increasing during both day and night time.
- Heat waves are increasing in frequency as well as magnitude.
- Extreme rainfall and rainstorms which can cause floods are increasing.
- Dry spell duration is also increasing.

3) Global Trend

- Human activities have already raised the global temperature by one degree centigrade compared to the pre-industrial levels.
- The global warming is now likely to reach 1.5 degree between 2030 and 2052 if it continues to rise at the current rate.
- The world is already witnessing the consequences of 1 degree global warming in the form of extreme weather events, rising sea levels and diminishing Arctic sea ice.
- There will be long-lasting or irreversible changes like the loss of some ecosystems if the temperature rises further.
- South Asia, particularly India, Pakistan and China are hotspots in a warming world.

4) IPCC Report

- IPCC report warns that global warming is occurring faster than anticipated and that it can have devastating impacts if steps are not taken to cut down emissions.
- India will be among the worst hit countries that may face wrath of calamities like floods and heatwaves, and reduced GDP.
- Other impacts include intensified droughts and water stress, habitat degradation, and reduced crop yields.
- Extreme temperature in India will affect agriculture, water resources, energy, and public health sectors.
- It will "disproportionately affect disadvantaged and vulnerable populations through food insecurity, higher food prices, income losses, lost livelihood opportunities, adverse health impacts, and population displacements".
- India stands to be one of the nations most significantly affected, given its huge population and levels of inequality and poverty.
- The impact on India could be devastating - not just socially but also politically.
- Floods of all kinds - riverine floods and coastal flooding are increasing, and are projected to increase further.

- Both the intensity and area affected by floods are projected to increase over India.
- Shortage of fish-based protein in the Indian Ocean due to rapid degradation of coral reefs, seagrass and mangroves and factors like pollution, overfishing, unsustainable coastal development.

5) Consequences

- Last year apart from the six cyclonic storms that formed over the northern Indian Ocean, India experienced “high impact weather” events.
- There were extreme heavy rainfall, heat and cold waves, snowfall, thunderstorms, dust storms, lightning and floods.
- Uttar Pradesh was the most adversely affected state which reported near 600 deaths due to cold waves, thunderstorm, dust storm, lightning and floods.
- Two extreme weather events: the Kerala floods in August and the thunderstorm activity over the northern states in May-June of 2018.
- Kerala floods were due to unusually heavy rains and are very rare over Kerala, which is not conventionally flood prone.
- Sea level rise will have a disastrous impact on the country, given its large coastline, and the number of people who live close to and depend on the sea for their livelihoods.

6) Concerns / Challenges

- A series of extreme weather events that took place last year concern about the future.
- India said merely achieving its INDC targets would cost it \$1tn. It is unclear who will bear these enormous costs.
- The Green Climate Fund has been woefully missing its deadlines for gathering funds.
- India has set ambitious renewable energy targets, but these come with their own set of challenges.
- It would need to store renewable energy on a massive scale, but the price of battery storage has not been falling fast enough.
- Another challenge is India's growing demand for transport.

7) Way Forward

- To limit ourselves to 1.5°C, global net anthropogenic CO₂ emissions should reduce by about 45 per cent from 2010 levels by 2030, and should reach net-zero around 2050.
- Use of coal should reduce steeply and its share in electricity mix should be reduced to close to 0 per cent by 2050.
- To limit global warming, countries will have to change policies in sectors like land, energy, industry, buildings, transport, and urban development.
- India needs to focus on improving air quality which can deliver returns in health and productivity as well as the recovery of monsoon.
- The efforts should include reforestation which would reduce the impact of extreme events.
- India needs to introduce electric vehicles and also urgently strengthen its bus, rail and public infrastructure to move towards more sustainable means of transport.
- **Solutions to contain the effects of global warming**
 - a. Better city planning and architecture.
 - b. Systems to monitor and control industrial and vehicular pollution.
 - c. Providing environmentally sustainable cooling solutions to citizens.
 - d. Developing and implementing heat action plans for both rural and urban areas.
 - e. Conserving water resources.