

IPCC Report

[UPSC Notes]

What is IPCC?

Intergovernmental Panel on Climate Change is an intergovernmental organization created in 1988 by the World Meteorological Organization and the United Nations Environment Program with the objective of providing governments at all levels with scientific information that they can use to develop climate policies.

- Intergovernmental Panel on Climate Change is a United Nation body for assessing the science related to climate change.
- The headquarters of the Intergovernmental Panel on Climate Change is in Geneva, Switzerland.
- The Intergovernmental Panel on Climate Change currently has 195 members, including India.
- For their efforts to build and disseminate greater knowledge about man-made climate change in the year 2007, the Intergovernmental Panel on Climate Change and the United States Vice President AL Gore were jointly awarded the Nobel Peace Prize.
- A comprehensive Assessment Report about the state of scientific, technical, and socio-economic knowledge on climate change, its impacts and future risks, and options for reducing the rate at which climate change is taking place; is prepared by the Intergovernmental Panel on Climate Change.

What is the IPCC Assessment Report?

In 1990 the first Intergovernmental Panel on Climate Change Assessment Report was published, which was the most in-depth assessment of the earth's climate condition.

- About every 7 years, the Assessment Reports are published by the Intergovernmental Panel on Climate Change.
- To produce a shared understanding of Climate Change, hundreds of professionals pore through every piece of relevant published scientific material.
- The four successive assessment reports were published in the year of 1995, 2001, 2007, and 2015.
- In Response to climate change, they have served as the foundation worldwide.
- The Kyoto Protocol and the Paris Agreement are the results of their discussion.
- In response to the fifth assessment report, the Paris agreement was negotiated.
- Three scientific working groups produced the Assessment Reports.
- The scientific foundation of climate change is focused on working group 1.
- Working group 2 is responsible for investigating potential consequences, vulnerabilities, and adaptive challenges.
- Possible climate change mitigation measures are focused on by working group 3.

IPCC 6th Assessment Report

The Intergovernmental Panel on Climate Change Sixth Assessment Report is an update of the Fifth Assessment Report released in 2013.

- The first Assessment Report was released in 1990 and so far, five assessment reports have been produced.
- In the second part of the 6th Assessment Report titled 'Climate Change 2022: Mitigation of Climate Change, working group 3 contribution to the 6th assessment report is released by the Intergovernmental Panel on Climate Change.
- It is a part of the Intergovernmental Panel on Climate Change 6th Assessment cycle. Other reports of Assessment Report 6 are-
 - Report of working group 1 titled 'Climate Change 2021: The Physical Science Basis' was released in August 2021.
 - The report of working group 2 titled 'Climate Change 2022: impacts, adaptation, and vulnerability released in February 2022.
 - The Synthesis Report is scheduled to be released in September 2022.

Key Findings of IPCC Latest Reports

The key findings of IPCC latest report are mentioned below.

1. Greenhouse Gases

- Over the period between 2010 to 2019, the total anthropogenic emissions of greenhouse gases continued to rise as did the total cumulative emissions of carbon dioxide since 1850.
- While Greenhouse gas emissions rose less rapidly between 2010 to 2019 than they did between 2000 and 2009, they were higher than those of any previous decade.
- All major Global sectors have seen an increase in greenhouse gas emissions since 2010.
- Primarily the cities are responsible for a growing share of global emissions.
- The carbon emissions from fossil fuels and industrial processes are reduced because of the improvement in the energy intensity of GDP and carbon intensity of energy.
- The rise in global industrial activity, transportation, energy supply, agriculture, and buildings, however, increases emissions more than this.

2. Least Developed Countries Emissions

- At least 18 countries have sustained Greenhouse Gas emission reduction for more than 10 years.
- Least Developed Countries and Small Island Developing States have much lower per capita emissions than the global average, excluding CO₂ emitted from land use, land-use change, and forestry.
- There is a disproportionately high share of global household green gas emissions coming from the 10% of households with the highest per capita emissions.

3. **Raise in Temperature**

- The global surface temperature was 1.09 degrees Celsius higher in 2011-2020 than 1850-1900, with larger increases over land than over the ocean.
- Since 1850, each of the last four decades has been successively warmer than any decade that preceded it.
- From 1850-1900 to 2010-2019, humans caused global surface temperature increases estimated to be 1.07 degrees Celsius.
- The Arctic sea ice area decreased by about 40% in September and about 10% in March between 1979-1988 and 2010-2019.
- The global mean sea level increased by 0.20 between 1901 and 2018.
- Climate zones have shifted poleward in both hemispheres.

4. **Impending Threats**

- Concentrations of carbon dioxide unmatched for at least 2 million years.
- Glacial Retreat unmatched for 2000 + years.
- The last decade was warmer than any period for 1,25,000 years.
- The sea level has risen faster than in any prior century for 3,000 years.
- Summer Arctic ice coverage is smaller than at any time in the last 1000 years.
- The ocean is warming faster than at any time Since the end of the last ice age.
- Ocean acidification at the highest level in the last 26,000 years.

5. **Technology with Low Emissions**

- Since 2010, unit costs of several low-emission technologies have fallen, and their global adoption has risen continuously.
- Due to weaker enabling conditions, including limited finance, technology development and transfer, and capacity, Innovation has lagged in developing countries.
- Digitalization has adverse side-effects unless appropriately governed, for example, increasing electronic waste, negative impacts on labor markets, etc.

6. Financial Shortfall

- In developing countries for the Agriculture, Forestry, and other land use sector, the gaps are the widest for the financial flow.
- It is recommended to scale up public grants as well as increase levels of public finance in developing countries.

Recommendations of IPCC Report

Following mitigation strategies are suggested by the report to achieve rapid and deep Greenhouse Gas Emissions reduction-

- Deploying carbon dioxide removal to counterbalance hard-to-eliminate emissions through biological methods such as reforestation and soil carbon sequestration.
- Maximize synergies and minimize trade-offs in policies, regulatory and economic instruments to enhance the support for climate action.
- Mitigation efforts can be embedded within the wider development context.
- There should be equitable partnerships that are built on engagement with civil society actors, political actors, businesses, youth, labor, media, indigenous people, and local communities.
- Integration of adaptation and mitigation within and across sectors.
- Supported by clear policy choices and signals from governments and the international community scaling up the mitigation financial flows.
- Policy packages that enable Innovation and build capacity.
- Through the partnership, agreements, institutions, and initiatives operating at global, sub-global, and sectoral levels and engaging multiple actors by International Cooperation.

Regional Findings for India

Following impacts are likely to be seen in India-

- During the 21st century, all over South Asia, heat waves and humid heat stress will be more intense and frequent.
- During the 21st century, both annual and summer monsoon precipitation will increase with enhanced inter-annual variability.
- Increases in precipitation and river floods.
- Fire weather seasons are projected to lengthen and intensify.
- During the 21st century, most regions of the Hindu Kush Himalaya covered areas, and snow volumes will decrease.
- In higher carbon dioxide emissions scenarios, snowline elevations will rise and glacier volumes are likely to decline with greater mass loss.
- Regional-mean sea level continues to rise and will contribute to more frequent coastal flooding.