Geography · GS - I

Examine the status of forest resources of India and its resultant impact on climate change.

EXAM YEAR	PAPER	SUBJECT
2020	GS - I	Geography

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Forest cover and tree cover; biodiversity; carbon sequestration; deforestation and degradation; forest fires; land-use change; community participation; afforestation; sustainable forest management

Model Answer

Introduction

India's forests support biodiversity, regulate water cycles, protect soils and store carbon. Their condition is therefore central to climate change mitigation and adaptation, as well as to the livelihoods of forest-dependent communities.

Status of forest resources

- **Forest and tree cover:** India has substantial forest and tree resources, as documented in the India State of Forest Report. However, their distribution, density and ecological quality vary significantly across states.
- **Regional diversity:** Dense forests occur in parts of the Western Ghats, Northeast and central India, while dry deciduous and thorn forests characterise other regions.
- **Degradation pressures:** Mining, infrastructure development, agricultural expansion, encroachment and unsustainable extraction affect forest ecosystems.
- **Fragmentation and fires:** Fragmentation reduces habitat connectivity, while forest fires and invasive species can damage ecological resilience.

- **Afforestation initiatives:** Compensatory afforestation, restoration programmes and community forestry seek to increase or improve forest resources, though plantation quality varies.

Impacts on climate change

- **Carbon storage:** Forests absorb atmospheric carbon dioxide through photosynthesis and store carbon in biomass and soils.
- **Emissions from degradation:** Deforestation and forest fires release stored carbon, contributing to greenhouse gas emissions.
- **Rainfall and temperature regulation:** Forests influence evapotranspiration, local temperatures and regional moisture cycles.
- **Climate resilience:** Forests protect watersheds, reduce soil erosion and help communities cope with floods, droughts and heat.
- **Biodiversity vulnerability:** Climate change can alter species distribution and increase stress on already fragmented ecosystems.

Way forward

India should prioritise natural forest restoration, protect old-growth forests, prevent fires, strengthen community participation and ensure rigorous environmental assessment of development projects. Afforestation should favour ecologically appropriate native species rather than relying solely on monoculture plantations.

Conclusion

India's forests are critical natural infrastructure for climate mitigation and adaptation. Protecting their ecological integrity, alongside increasing tree cover, is essential for achieving sustainable development and long-term climate resilience.