India's Forest and Vegetation Cover – Challenges and the Evolving Governance Framework

Mains: *GS III – Environment*

Why in News?

India's forest and vegetation cover faces mounting pressures from infrastructure expansion, forest fires, invasive species, monoculture plantations, and large-scale diversion of forest land for non-forest purposes.

What are the challenges faced by forests in India?

- **Development Projects and Forest Diversion –** Large infrastructure projects often trigger ecological debates.
- Recently, a six-member special bench of the National Green Tribunal (NGT) disposed of challenges to the Great Nicobar mega infrastructure project, concluding that there were "adequate safeguards" in its environmental clearance.
- The RS.80,000-crore *Holistic Development of Great Nicobar Island project* spans 166 sq km and involves diversion of nearly 130 sq km of tropical rainforest.
- It includes an international transhipment port at *Galathea Bay*, an integrated township, a civil and military-use airport, and a gas- and solar-based power plant.
- While the project is strategically significant, experts have raised concerns about the ecological cost of diverting dense evergreen tropical forests.
- Compensatory afforestation for this project has been proposed in Haryana's Aravalli districts.
- However, dry deciduous forests of the Aravallis may not fully compensate for the ecological value of the dense tropical rainforests of Great Nicobar, which host unique biodiversity and carbon storage capacity.
- Between 2020 and 2025, over 99,000 hectares of forest land were diverted for non-forestry purposes such as mining, highways, irrigation, and power projects.
- Examples include the Western Dedicated Freight Corridor, the Delhi-Dehradun Expressway, and the Versova-Bhayandar coastal road project in Maharashtra, which may impact thousands of mangrove trees.
- Although compensatory plantations have been proposed, concerns remain about ecological equivalence and long-term survival of planted trees.
- **Forest Fires –** Forest fires are one of the most pressing challenges to India's forest cover.
- Around 54.40 per cent of India's forest area is exposed to occasional fires.
- According to the Forest Survey of India, over 2 lakh forest fire incidents were recorded

between November 2023 and June 2024, with an even higher number in the subsequent fire season.

- Traditionally, forest fires were concentrated in late spring and early summer.
- However, recent years have witnessed increasing fire incidents even during winter months, particularly in Himalayan states such as Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Arunachal Pradesh, and Nagaland.
- The National Disaster Management Authority identifies key drivers of forest fires:
    - Accumulation of pine needles in the western Himalayas.
    - Collection of tendu leaves and mahua flowers in central India.
    - Shifting cultivation (jhum) in the Northeast.
    - Rising temperatures, erratic rainfall, prolonged dry spells, and lightning.
- Forest fires cause biodiversity loss, soil erosion, habitat destruction, and air pollution.
- They also release stored carbon back into the atmosphere, undermining India's climate commitments.
- Socio-economic and cultural impacts on forest-dependent communities are equally severe.
- **Invasive Alien Species and Ecological Degradation –** Invasive alien species are another major threat.
- Globally recognised as one of the five primary drivers of biodiversity loss, invasive species often outcompete native flora and disrupt ecosystem balance.
- India is among the countries bearing significant economic and ecological costs due to invasive species.
- One of the most widespread invasive species in India is *Lantana camara*, introduced during the colonial period.
- It has invaded large tracts of forests, including tiger reserves, reducing native biodiversity and increasing fire susceptibility.
- Another example is *Prosopis juliflora (vilayati kikar),* introduced to enhance green cover but now linked to ecological degradation in the Delhi Ridge and other regions.
- Such species alter soil chemistry, restrict regeneration of native plants, and reduce grazing areas, thereby affecting both biodiversity and livelihoods.
- **Monoculture Plantations and Reduced Resilience –** Monoculture plantations, often involving species like pine, eucalyptus, and teak, present another ecological concern.
- While these plantations may contribute to short-term afforestation targets, they often store less carbon compared to natural forests and are more susceptible to fires.
- In contrast, native broadleaf species such as oak and rhododendron in Himalayan regions grow slowly, retain moisture, accumulate more carbon, and enhance biodiversity.
- Monocultures reduce ecological resilience, increase vulnerability to pests and fires, and fail to replicate the complex ecosystem services provided by natural forests.

What is the evolution of forest governance in India?

- **The Forest Act of 1865** – It marked the beginning of state control over forests.
- **The Forest Act of 1878** – It classified forests into reserved, protected, and village forests, curtailing customary rights.
- **The Indian Forest Act, 1927** – It consolidated these provisions and strengthened the

powers of forest officials, often at the cost of local communities' rights.

- **The Wild Life (Protection) Act, 1972** – It enabled the creation of national parks and sanctuaries but restricted local access.
- **The National Forest Policy of 1952** – It emphasised state control for national development.
- A paradigm shift occurred with the National Forest Policy of 1988, which recognised the symbiotic relationship between tribal communities and forests.
- It promoted Joint Forest Management (JFM) and aimed to bring 33 per cent of India's geographical area under forest or tree cover.
- **Forest Rights Act, 2006** – The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (Forest Rights Act), further recognised the rights of forest-dwelling communities and enhanced their role in conservation.
- **The Forest (Conservation) Act, 1980** – It was amended in 2023 and it seeks to streamline forest clearance processes while balancing biodiversity protection and developmental needs.
- However, concerns persist regarding exemptions in border areas and narrowing of the Act's conservation scope.
- **Climate Commitments and Carbon Sink Targets** – Under its Nationally Determined Contributions (NDCs) to the Paris Agreement, India aims to create an additional carbon sink of 2.5–3.0 billion tonnes of CO_2 equivalent by 2030.
- Forest conservation and afforestation are central to achieving this target.
- However, frequent forest fires, diversion of forest land, and monoculture plantations threaten long-term carbon stability.
- Compensatory afforestation must prioritise ecological equivalence, native species diversity, and long-term maintenance rather than mere numerical targets.

What needs to be done?

- **Advanced Fire Management** – Early-warning systems, satellite-based monitoring, community fire brigades, and rapid-response mechanisms can mitigate fire risks.
- **Control of Invasive Species** –Systematic mapping, removal programmes, and restoration with native species are essential.
- **Promoting Native Afforestation** – Mixed-species plantations using indigenous varieties enhance biodiversity, carbon sequestration, and resilience.
- **Community Participation** – Strengthening Joint Forest Management and empowering Gram Sabhas under the Forest Rights Act ensures sustainable conservation.
- **Balanced Development Planning** – Environmental impact assessments must be rigorous, transparent, and scientifically robust.
- **Technological Monitoring** – High-resolution satellite imagery and GIS tools can ensure real-time ecological surveillance.

What lies ahead?

- India's forest and vegetation cover stands at a critical juncture. Infrastructure expansion, forest fires, invasive species, and monoculture plantations pose serious

ecological risks.

- While the governance framework has evolved from colonial centralisation to participatory conservation, gaps remain in implementation and policy coherence.
- Balancing development with ecological sustainability requires scientific planning, community involvement, and adherence to constitutional and environmental safeguards.
- Forests are not merely resources; they are ecological assets vital to biodiversity, climate resilience, and the well-being of future generations.
- Ensuring their protection is indispensable for India's sustainable development trajectory.

Reference

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