Reviving India’s Forests

This editorial is based on “ Canary in the canopy: on the India State of Forest Report 2023” which was published in The Hindu on 24/12/2024. The article brings into picture the complexities behind India’s forest cover, reported at 25% of the total land area. While seemingly positive, it masks deeper concerns like development pressures, rising fires, and inadequate resources for conservation.

For Prelims: India's forest cover, State of Forest Report 2023, Forest Conservation Act 1980, Forest Rights Act 2006, Forest Survey of India (2019) , Green India Mission,National Agroforestry Policy, SATAT scheme, National Bio-Energy Mission, Chipko Movement, Mangrove Initiative for Shoreline Habitats and Tangible Incomes , Khasi Sacred Forest, Red sanders, National Livestock Mission.

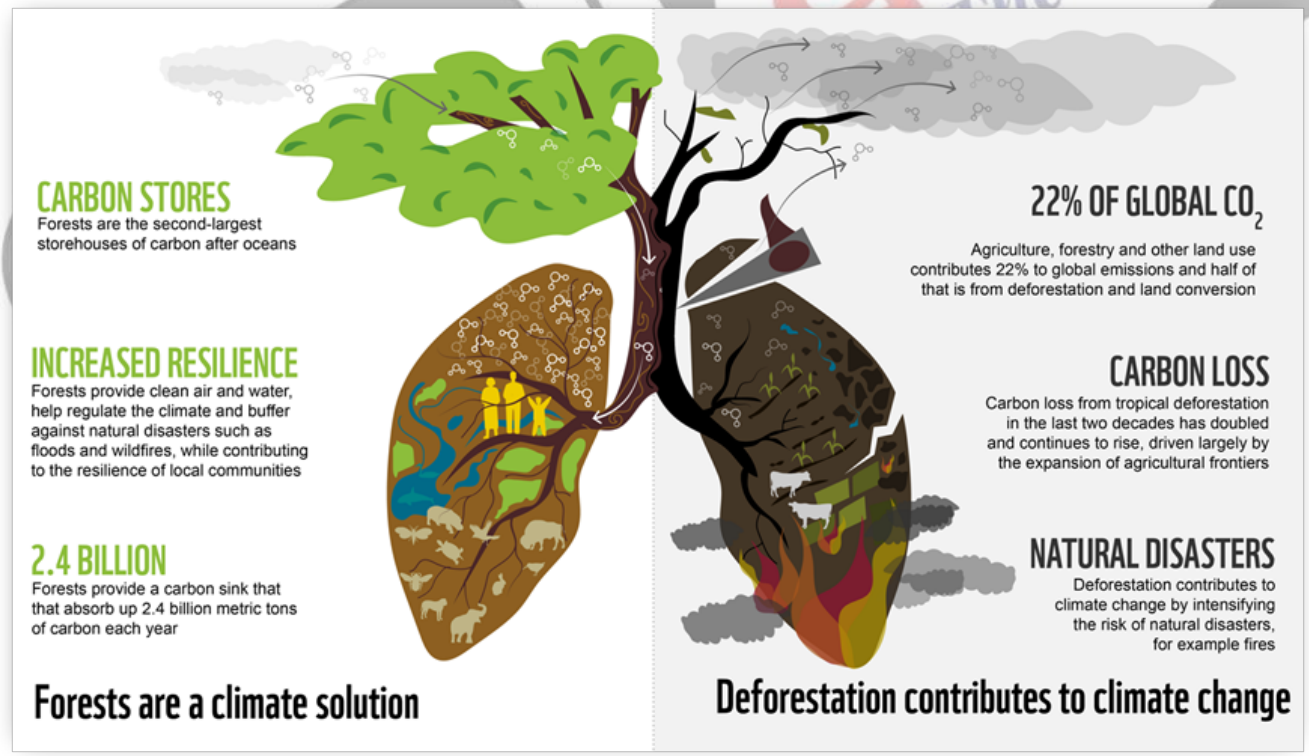
For Mains: Significance of Forests for India, Major Threats to the Sustainability of India’s Forests

India's forest cover, reportedly at **25% of the total land area** according to the State of Forest Report 2023, is seen as a positive development, but critics argue that it masks underlying concerns **in forest health and management.** While post-independence laws like the Forest Conservation Act 1980 and Forest Rights Act 2006 aimed at reforming colonial policies, their implementation has faltered due to development pressures and climate change**. Rising forest fires, limited conservation resources, and weakening protections** further threaten forest ecosystems. A holistic approach with accurate reporting, better resource-use, and community involvement is crucial for safeguarding India’s forests.

What Role do Forests Play in Driving India's Economy and Supporting Nation Development?

- **Livelihoods and Employment Generation:** In India, the **Forest Survey of India (2019)** estimated, roughly **26% of the total 650,000 villages** can be classified as forest fringe villages, where forests fulfill significant socio-cultural and livelihood needs
    - For instance, forest-based industries such as paper, pharmaceuticals, and handicrafts significantly contribute to employment.
- **Climate Regulation and Carbon Sequestration:** India's forests play a critical role in mitigating climate change by **sequestering millions of tonnes of CO_2 annually**.
    - This supports India's commitment to achieving **net-zero emissions by 2070** and creating carbon credits.
    - Recent afforestation initiatives under the **Green India Mission** have targeted the restoration of **26 million hectares** of degraded land.
- **Economic Contribution Through Timber and Industry:** The forestry sector contributes **1.7% to India's GDP**, supporting industries like furniture, construction, and paper manufacturing.
    - The **National Agroforestry Policy (2014)** has facilitated the planting of fast-growing species like **eucalyptus,** benefiting industries and enhancing rural incomes.
- **Biodiversity and Ecotourism:** Forests harbor the **majority of India's terrestrial biodiversity**, supporting ecotourism and conservation-linked livelihoods.
    - For example, tiger reserves like **Ranthambore and Corbett** attract millions of tourists

annually.
    - The **Project Tiger initiative** has doubled the tiger population to **3925 in 2023**, boosting India's global conservation image.
    - This biodiversity also supports ecosystem services like **pollination, crucial for agriculture and food security.**
- **Renewable Energy and Biomass Utilization:** Forests provide biomass energy, supporting India's renewable energy transition.
    - The **National Bio-Energy Mission** promotes the sustainable use of forest residues, helping achieve the **500 GW renewable energy target by 2030**.
    - Forest residues are also being utilized for biofuel production under initiatives like the **SATAT scheme**.
- **Watershed and Soil Conservation:** Forests help control the water cycle by regulating precipitation, evaporation, flows and prevent soil erosion, ensuring agricultural productivity.
    - Forested watersheds contribute to critical river systems like the **Indus, Ganga and Brahmaputra,** supporting **700 million people**.
- **Cultural and Spiritual Significance:** Forests hold immense cultural and spiritual value in India, deeply rooted in traditions and practices like worshiping sacred groves (e.g., **Khasi Sacred Forest in Meghalaya).**
    - This helps preserve biodiversity hotspots and promotes eco-friendly tourism.
    - For example, the **Chipko Movement** remains a testament to the intertwined relationship between forests and cultural heritage.
- **Disaster Mitigation and Resilience:** Forests act as natural barriers against disasters like cyclones, floods, and landslides, saving billions in economic losses annually.
    - Mangroves in **Bhitarkanika, Odisha**, shielded against **Cyclone Dana's impact,** demonstrating their crucial role in storm surge protection.
    - The **Mangrove Initiative for Shoreline Habitats and Tangible Incomes (MISHTI)** underlines their role in sustainable development.



What are the Major Threats to the Sustainability of India's Forests?

- **Deforestation and Land-Use Change:** India's forests are under immense pressure from deforestation driven by **settlement expansion and infrastructure projects.**

    - Government data reveals a loss of **1,488 sq km of 'unclassed forests'** (non-notified forests under government ownership) between 2021 and 2023, and critics argue that there is **no explanation provided in ISFR 2023 for the same.**
    - For instance, the **Hasdeo Arand coal mining project in Chhattisgarh** has sparked protests over the loss of biodiversity-rich forests.
        - Such changes irreversibly degrade ecosystems and reduce forest sustainability.
- **Climate Change and Forest Fires:** Rising global temperatures and erratic rainfall patterns make Indian forests more vulnerable to fires and drought.
    - A recent analysis by the FSI of **forest fires** across **705 protected areas** in India revealed **6,046 incidents in national parks this season.**
    - **Papikonda National Park in Andhra Pradesh** recorded the highest number of cases, followed by **Indravati National Park in Chhattisgarh** and **Manas National Park in Assam.**
- **Illegal Logging and Timber Smuggling:** Illegal logging depletes high-value tree species like teak and sandalwood, threatening biodiversity and disrupting ecosystems.
    - For example, **red sanders smuggling in Andhra Pradesh** has led to deforestation in protected areas.
        - Despite stricter forest laws, limited enforcement and porous borders exacerbate this issue.
    - Also, **India has become a net importer of timber** with the country imported over **$2.7 billion worth of timber in 2023**
- **Encroachment and Habitat Fragmentation:** Encroachment for agriculture and allied activities fragments forests and disrupts wildlife corridors.
    - Over **3 lakh hectares of forest land** has been diverted for non-forestry use in India over the last 15 years under the **Forest (Conservation) Act, 1980**
    - Infrastructure projects like the **Char Dham road project** have fragmented critical **Himalayan ecosystems,** endangering species like the snow leopard and red panda.
- **Overexploitation of Non-Timber Forest Products (NTFPs):** Excessive harvesting of NTFPs such as **bamboo, tendu leaves, and medicinal plants** undermines forest regeneration.
    - This threatens both **biodiversity and livelihoods.** The **depletion of sandalwood forests in Karnataka**, for example, has impacted the local fragrance industry.
- **Rise of Invasive Species:** The spread of invasive alien species like ***Prosopis juliflora*** is reducing the health and biodiversity of India's forests.
    - For instance, ***Lantana camara***, which was introduced by the British, has now become one of the most invasive plants in India, **covering 40% of the tiger range.**
    - These species outcompete native plants, as seen in **Rajasthan's Keoladeo National Park**.
- **Human-Wildlife Conflicts:** Forest fragmentation has increased **human-wildlife conflicts,** affecting both human lives and conservation efforts.
    - Between 2019 and 2024, **elephant attacks in India resulted in 2,727 fatalities,** while tiger attacks claimed 349 lives.
    - For instance, Man-animal conflict in Bengaluru leads to casualties among humans and animals, prompting the formation of a **Leopard & Elephant Task Force.**
- **Weak Enforcement and Governance:** Ineffective enforcement of forest laws and delayed implementation of policies undermine sustainable forest management.
    - Despite the **Compensatory Afforestation Fund Act (2016)**, in 2021-22, only 48% of the approved funds were utilised under Compensatory Afforestation Fund Management and Planning Authority.
    - The **Forest Rights Act (2006)** also remains poorly implemented,a significant number of **claims rejected** due to bureaucratic hurdles.
    - Also, recent amendments to the **Forest Conservation Act, 1980**, have ignited a contentious legal debate over India's framework for forest protection.
- **Pollution and Ecosystem Degradation:** Pollution from industrial and urban activities reduces forest soil fertility and water quality, impacting forest ecosystems.
    - According to the CWC report, **141 out of 328 river monitoring stations** in India **(43%)** recorded alarming concentrations of one or more toxic heavy metals between January and December 2022.
    - In regions like the **Western Ghats, acid rain** from industrial emissions is reducing the

regenerative capacity of forests, endangering biodiversity hotspots.

- **Overgrazing by Livestock:** Uncontrolled grazing in forested areas reduces natural vegetation and affects regeneration, particularly in arid and semi-arid zones.
    - The **Thar Desert region** faces degradation due to overgrazing. Additionally, forest-dependent pastoralists struggle with declining resources, increasing pressure on fragile ecosystems.
    - Programs like the **National Livestock Mission** lack effective grazing management plans.
- **Unsustainable Tourism Practices:** Mass tourism in ecologically sensitive areas increases pollution and disrupts wildlife.
    - Popular tourist destinations like **Corbett Tiger Reserve** and **Kaziranga National Park** face issues like vehicle pollution and habitat degradation due to unregulated tourism.

What Measures can be Adopted to Enhance Forest Conservation in India?

- **Strengthening Forest-Based Livelihoods:** Promoting sustainable forest-based livelihoods can align economic needs with conservation goals.
    - Initiatives like **Van Dhan Vikas Yojana** have shown success by training tribal communities to process and market non-timber forest products (NTFPs).
    - Expanding such programs to include agroforestry and ecotourism can reduce dependency on deforestation.
- **Expanding Community Participation:** Involving local communities in conservation efforts through **Joint Forest Management (JFM)** and the **Forest Rights Act (2006)** can enhance sustainable practices.
    - Encouraging collective efforts like **Forest Protection Committees (FPCs)** ensures ownership and better enforcement.
    - For example, **JFM in Madhya Pradesh has restored over 1.2 million hectares** of degraded land, proving the efficacy of participatory models.
        - Expanding this model nationally can yield long-term results.
- **Promoting Afforestation and Reforestation:** Programs like the **Green India Mission** and commitments under the **Bonn Challenge** should focus on **afforestation using native species to ensure biodiversity restoration.**
    - India has pledged to restore **26 million hectares** of degraded land by 2030, which can be accelerated by integrating these efforts with local employment schemes like **MGNREGA**.
    - Recent success in Tamil Nadu, where **375 ha hectares of mangroves** were restored, showcases the scalability of such efforts.
- **Enforcing Stricter Anti-Encroachment Measures:** Strengthening enforcement against encroachment through satellite monitoring and digital databases can protect critical forest areas.
    - The **Forest Survey of India (FSI)** already uses geospatial tools to monitor deforestation, which can be expanded to track illegal activities in real time.
    - For instance, in Assam, geospatial monitoring helped reclaim over **1,500 hectares** of encroached land in **Kaziranga National Park**.
        - Scaling such technology nationwide can curb habitat loss.
- **Leveraging Technology for Conservation:** Adopting technologies like **LiDAR (Light Detection and Ranging)**, drones, and AI-based monitoring systems can ensure efficient forest management.
    - The **National Remote Sensing Centre (NRSC)** is already using satellite imagery for forest mapping, which can be expanded for real-time tracking of forest fires and illegal logging.
    - For example, **LiDAR-based mapping in the Western Ghats** has identified critical biodiversity zones for targeted conservation.
- **Incentivizing Private Sector Participation:** Encouraging private players to invest in afforestation projects through **Corporate Social Responsibility (CSR)** and carbon offset markets can enhance conservation funding.
    - The **Compensatory Afforestation Fund Management (CAMPA)** can be streamlined to integrate corporate partnerships.
    - For instance, **Reliance Industries' partnership with Gujarat for mangrove restoration** highlights how public-private models can deliver results.
        - Clear guidelines for **carbon credit trading** will attract more investments.
- **Integrating Agroforestry and Sustainable Agriculture:** Promoting agroforestry practices

under the **National Agroforestry Policy (NAP)** can reduce deforestation for agriculture while increasing farmers' incomes.
    - Agroforestry models combining trees with crops like **millets or oilseeds can enhance soil health and carbon sequestration.**
    - **Karnataka's success in promoting agroforestry** benefits both biodiversity and rural economies.
- **Addressing Invasive Species:** Systematic removal and control of invasive alien species like Lantana camara and Prosopis juliflora should be prioritized through public-private partnerships.
    - Programs like the **National Biodiversity Action Plan (NBAP)** can be enhanced to focus on invasive species management.
    - Rajasthan's forestry officials turn to **NREGA** for assistance in removing invasive **juliflora**. Expansion of such campaigns can improve forest health nationwide.
- **Climate-Resilient Forest Management:** Climate-adaptive forest management practices, including **planting drought-resistant species** and promoting water conservation, should be prioritized.
    - Programs like the **Catch the Rain initiative** can be integrated with forest conservation efforts to improve water availability in forested areas.
- **Developing Eco-Tourism Models:** Promoting sustainable eco-tourism can generate revenue for conservation while creating awareness about biodiversity.
    - States like **Kerala and Uttarakhand have pioneered eco-tourism projects** that balance economic benefits with forest preservation.
    - For example, Kerala's **Thenmala Eco-Tourism Project** supports local livelihoods. Expanding such models across biodiversity hotspots can enhance forest sustainability.
- **Strengthening Legal Frameworks and Governance:** Amending the **Indian Forest Act (1927)** and the **Wildlife Protection Act (1972)** to address emerging challenges like **illegal logging, invasive species, and climate change** impacts can strengthen conservation efforts.
    - The implementation of **CAMPA funds**, of which only **33% had been utilized as of 2022**, needs stricter accountability mechanisms.
    - Improved coordination between forest departments and local governments can bridge enforcement gaps.
- **Enhancing Biodiversity Corridors:** Developing forest corridors between fragmented habitats can reduce human-wildlife conflicts and preserve biodiversity.
    - Projects like the **National Wildlife Corridors Project** should be expanded to include all critical tiger and elephant reserves.
    - For instance, the **restoration of the Kaziranga-Karbi Anglong corridor** reduced wildlife stress and human conflicts, demonstrating the effectiveness of such measures.

Conclusion:

India's forests are pivotal to its **ecological balance, economic growth, and cultural heritage.** While significant progress has been made in enhancing forest cover, **challenges such as deforestation, climate change, and weak enforcement demand urgent attention**. A multi-faceted approach focusing on **sustainable livelihoods, community participation, technological integration**, and stricter governance can ensure the long-term health of forest ecosystems.

Drishti Mains Question:

Forests are vital for ecological balance, economic development, and cultural heritage. Critically analyze the challenges faced in forest conservation in India and suggest measures to ensure their sustainable management in the face of climate change and development pressures.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q1. At the national level, which ministry is the nodal agency to ensure effective implementation of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of

Forest Rights) Act, 2006? (2021)

(a) Ministry of Environment, Forest and Climate Change

(b) Ministry of Panchayati Raj

(c) Ministry of Rural Development

(d) Ministry of Tribal Affairs

Ans: (d)

Q2. A particular State in India has the following characteristics: (2012)

1. It is located on the same latitude which passes through northern Rajasthan.
2. It has over 80% of its area under forest cover.
3. Over 12% of forest cover constitutes the Protected Area Network in this State.

Which one among the following States has all the above characteristics?

(a) Arunachal Pradesh

(b) Assam

(c) Himachal Pradesh

(d) Uttarakhand

Ans: (a)

Mains

Q. “The most significant achievement of modern law in India is the constitutionalization of environmental problems by the Supreme Court.” Discuss this statement with the help of relevant case laws. (2022)