



## Rethinking Forest Conservation Efforts

*This editorial is based on “[The issue with India’s tree planting schemes](#)” which was published in The Hindu on 19/07/2024. The article highlights the degradation of forest landscapes due to unsustainable practices and underscores the need for effective tree-planting and ecosystem restoration strategies, emphasizing the importance of community participation, post-planting measures, and technical considerations for sustainable environmental conservation.*

**For Prelims:** [Decade of Ecosystem Restoration](#), [Namdapha flying squirrel](#), [Green India Mission](#), [Forest Rights Act](#), [Van Dhan Yojana](#), [Biological Diversity Act](#), [Nilgiris Biosphere Reserve](#), [Ken-Betwa river linking project](#), [T.N. Godavarman Thirumulpad case](#), [Nationally Determined Contributions](#), [Compensatory Afforestation Fund Management and Planning Authority](#), [Forest Survey of India](#).

**For Mains:** Major Challenges Faced by Forests in India, Measures to Enhance Forest Conservation in India

The **United Nations' declaration of 2021-2030** as the [Decade of Ecosystem Restoration](#) has spurred global efforts to address [deforestation](#) and [climate change](#), with tree planting emerging as a popular strategy. Numerous large-scale initiatives have been launched worldwide, attracting media attention and public participation. However, these mass tree-planting drives have **faced criticism from environmentalists and scientists for their limited community involvement, inadequate post-planting care, and tendency to promote monocultures**. Experts caution that such oversimplified approaches may prove less effective for carbon sequestration and biodiversity development than intended.

India, in particular, faces significant challenges in **forest conservation**, including widespread encroachment, high dependence of millions on forests for livelihood, and **substantial loss of forest land to non-forestry purposes**. While the country has made commitments to restore degraded forests and increase forest cover, there is a growing recognition of the need for more nuanced, ecologically sensitive strategies.

### What is the Significance of Forests for India?

- **Biodiversity Conservation:** The **Ministry of Environment and Forests Govt. of India** (2000) records 47,000 species of plants and 81,000 species of animals in India.
  - This is about **7% and 6.5% respectively of global flora and fauna** making them crucial biodiversity hotspots.
  - The discovery of new species, such as the [Namdapha flying squirrel](#) in **Arunachal Pradesh in 2022**, highlights the ongoing importance of forests as reservoirs of undiscovered life.

- **Climate Change Mitigation:** Forests act as significant **carbon sinks**, with India's forests and trees absorbing **15% of its total CO2 emissions** (2016).
  - The country's pledge to create an additional carbon sink of 2.5-3 billion tonnes of CO2 equivalent by 2030 relies heavily on forest conservation and expansion.
  - Recent efforts like the [Green India Mission](#), aiming to increase forest cover by 5 million hectares, demonstrate India's commitment to leveraging forests for climate action.
- **Livelihood Support:** Over **250 million people** in India depend on forests for their livelihoods, including tribal communities.
  - The implementation of the [Forest Rights Act](#) and recent initiatives like [Van Dhan Yojana](#) aim to enhance forest-based livelihoods sustainably.
  - The success of programs like **Madhya Pradesh's Tendu Patta collection**, which benefits tribal people, illustrates the economic potential of well-managed forests.
- **Ecosystem Services:** Forests provide essential ecosystem services valued at trillions of rupees annually, including **air purification, soil conservation, and pollination**.
  - The recent emphasis on valuing these services, as seen in **the Economics of Ecosystems and Biodiversity (TEEB) Initiative**, is reshaping forest management policies.
- **Cultural and Spiritual Significance:** Forests hold deep cultural and spiritual importance for many communities in India, supporting traditional knowledge systems and practices.
  - The recognition of **sacred groves** under the [Biological Diversity Act](#) strengthens the protection of these culturally significant forest patches.
  - Initiatives like the documentation of traditional ecological knowledge in the [Nilgiris Biosphere Reserve](#) highlight the intertwining of cultural preservation and forest conservation.

## What are the Major Challenges Faced by Forests in India?

- **Deforestation and Forest Degradation:** Despite conservation efforts, India continues to lose forest cover due to development projects, mining, and agriculture expansion.
  - The Forest Survey of India report 2021 showed that India's moderately dense forest area decreased by **1,582 sq km**.
  - Recent controversies like the **Aarey forest clearing for Mumbai Metro** and the **diamond mining in Madhya Pradesh's Buxwaha forests** highlight the ongoing tension between development and conservation.
  - The controversial [Ken-Betwa river linking project](#), set to submerge 6,017 hectares of forest land including part of [Panna Tiger Reserve](#), epitomizes this conflict.
- **Human-Wildlife Conflict:** As forest habitats shrink and fragment, incidents of human-wildlife conflict have increased significantly.
  - For instance, more than **500 people, 100 elephants** die every year due to human-animal conflict in India.
  - The situation in states like **Maharashtra**, where **leopard** encounters in human settlements have become frequent, exemplifies this issue.
- **Plantation Vs Conservation:** Plantation drives often **promote monoculture**, which can harm biodiversity and ecosystem health.
  - **Monocultures lack the ecological diversity necessary** to support a wide range of plant and animal species, leading to less resilient ecosystems.
  - Moreover, these drives frequently **neglect the specific ecological needs of the local environment**, sometimes planting trees in inappropriate areas like grasslands, which can disrupt existing habitats and exacerbate issues like wildfires.
  - Additionally, many plantation initiatives **lack adequate post-planting care and monitoring**, resulting in low survival rates of the planted trees.
- **Legislative Loopholes and Judicial Interventions:** Recent amendments to Forest Conservation Act, 1980 have sparked a complex legal battle over India's forest protection framework.
  - The proposed changes aim to **exempt certain forest lands recorded before 1980 from protection**, potentially opening up vast areas to deforestation.
  - This move contradicts the **Supreme Court's 1996 verdict in the [T.N. Godavarman Thirumulpad case](#)**, which ensured legal protection for all forests in government records.
  - Critics argue that vague terms like '**proposed**', '**ecotourism facilities**', and 'any other purposes' in the amendments could be exploited for activities detrimental to forest ecosystems.

- In a significant development, in **February 2024**, the **Supreme Court instructed the government to maintain this broad interpretation of "forest"** until a final decision is reached on a petition challenging the amended Forest Conservation Act of 2023.
- **Climate Change Impacts:** Indian forests are increasingly vulnerable to climate change effects, including **altered precipitation patterns, increased forest fires, and pest outbreaks**.
  - The **2024 forest fires in Uttarakhand** exemplify this growing threat.
  - While India has committed to creating an additional carbon sink through forests under its **Nationally Determined Contributions**, achieving this amid changing climatic conditions poses a significant challenge.
  - Recent initiatives like the **National Action Plan on Forest Fires (2018)** aim to address these issues, but implementation remains a challenge.
- **Invasive Species and Biodiversity Loss:** The spread of invasive species is threatening native biodiversity in many Indian forests.
  - For instance, the rapid spread of **Lantana camara in the Western Ghats and Senna spectabilis in Mudumalai Tiger Reserve** is altering ecosystem dynamics.
  - Recent studies showing the decline of native grasslands due to invasive species underscore this issue.
- **Funding and Resource Allocation Issue:** Despite the critical importance of forests, funding for forest conservation and management often falls short.
  - The **Compensatory Afforestation Fund Management and Planning Authority (CAMPA) funds**, meant for afforestation, have faced issues of underutilization and misallocation.
- **Shrinking Forest Corridors:** Wildlife corridors, crucial for animal movement and genetic diversity, are rapidly disappearing.
  - The **Kaziranga-Karbi Anglong corridor in Assam**, vital for elephant migration, is shrinking due to encroachment and infrastructure development.
  - Similarly, the **Kanha-Pench corridor in central India faces fragmentation**, threatening tiger populations.
  - These disappearing links not only isolate animal populations but also intensify human-wildlife conflicts.

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

- **Integrated Landscape Management Approach:** Implement a holistic landscape-level conservation strategy that goes beyond protected area boundaries.
  - This approach should **integrate forest conservation with sustainable land use practices** in surrounding areas.
  - For example, the **Terai Arc Landscape initiative, spanning India and Nepal**, has shown success in connecting fragmented habitats while addressing local livelihood needs.
  - Scaling up such models across India can help maintain ecological connectivity and reduce human-wildlife conflicts.
- **Technological Integration in Forest Monitoring:** Leverage advanced technologies for real-time forest monitoring and management. Implement a **nationwide network of remote sensing, drones, and AI-powered systems** for early detection of forest fires, illegal logging, and encroachments.
  - The **Forest Survey of India's** adoption of high-resolution satellite imagery for forest cover assessment is a step in the right direction.
    - Expanding this to include IoT sensors for wildlife tracking and habitat health monitoring can significantly enhance conservation efforts.
- **Community-Centric Conservation Models:** Strengthen and scale up successful community forest management models like **Van Panchayats in Uttarakhand and Community Forest Resource rights under the Forest Rights Act**.
  - These models have shown remarkable success in forest regeneration and biodiversity conservation.
  - For instance, the **Mendha Lekha village in Maharashtra has effectively managed 1,800 hectares of forest**, increasing forest cover and local incomes.
    - Replicating such models with proper policy support can lead to more effective and sustainable forest conservation.
- **Green Finance and Market-Based Conservation Mechanisms:** Develop innovative financing

mechanisms to support forest conservation.

- Implement **large-scale Payment for Ecosystem Services (PES) schemes**, where beneficiaries of forest services pay for their maintenance.
- Additionally, explore **carbon credit markets and green bonds** to finance forest conservation and restoration projects.
- **Urban Forestry and Green Infrastructure:** Develop comprehensive urban forestry programs that go beyond tree planting to create functional urban ecosystems.
  - This should include the **creation of urban biodiversity parks, green corridors, and the integration of nature-based solutions** in urban planning.
  - The success of **Delhi's Yamuna Biodiversity Park** in restoring ecosystem services and biodiversity can serve as a model.
- **Strengthening Forest Governance and Capacity Building:** Modernize forest departments through comprehensive capacity building programs.
  - This should focus on training forest staff in new technologies, community engagement skills, and interdisciplinary approaches to conservation.
- **Sustainable Forest-Based Livelihoods:** Develop and promote sustainable, forest-based livelihood options to reduce dependency on destructive forest use.
  - This can include scaling up successful models like the **Van Dhan Yojana for non-timber forest produce** and promoting eco-tourism initiatives managed by local communities.
  - The **Periyar Tiger Reserve's eco-development committees**, which have successfully integrated conservation with community livelihoods, can serve as a model for replication.
- **Restoration of Degraded Forests and Ecological Corridors:** Launch a nationwide program for ecological restoration of degraded forests and critical wildlife corridors. This should go beyond traditional afforestation to include assisted natural regeneration and ecosystem-based approaches.
  - The **successful restoration of the Aravalli Biodiversity Park in Gurugram** from a mining wasteland to a thriving ecosystem demonstrates the potential of such approaches.
  - Identifying and restoring key corridors can significantly enhance landscape-level conservation.
- **Legal and Policy Reforms for Enhanced Protection:** Strengthen legal frameworks for forest protection by addressing loopholes in existing laws and ensuring strict implementation.
  - This includes **amending the Forest Conservation Act** to provide **clearer definitions of forest land** and streamlining the process for declaring eco-sensitive zones.
  - Additionally, develop a comprehensive national policy on wildlife corridors to provide legal protection to areas outside protected forests that are crucial for wildlife movement.
- **Indigenous Seed Banks for Forest Restoration:** Establish a network of community-managed indigenous seed banks to preserve local biodiversity and support forest restoration efforts.
  - These banks can **collect, store, and distribute seeds of native species**, ensuring that reforestation efforts maintain local genetic diversity.
  - The successful model of **Vrikshamitra in Maharashtra** could be replicated across different forest types in India.
- **Drone-Seeding for Difficult Terrains:** Employ drone technology for seed dispersal in difficult-to-access or degraded forest areas.
  - This method can be **particularly effective for restoring mangrove forests** or revegetating steep hillsides.
- **Combating Forest Fires:** To effectively combat forest fires, a multi-pronged approach is crucial. Firstly, preventative measures like **controlled burns to manage undergrowth, creating fire breaks around vulnerable areas**, and educating communities on responsible forest use are essential.
  - **Early detection** through watchtowers and advanced technology can help nip fires in the bud.
  - Additionally, investing in **well-equipped firefighting teams** with rapid response capabilities and specialized training is paramount.
  - Finally, fostering **international collaboration for knowledge sharing and resource deployment during large-scale wildfires** can significantly improve our collective response to this environmental threat.

**Drishti Mains Question:**

Discuss the challenges and limitations of large-scale plantation drives as a strategy for forest conservation in India. Suggest alternative approaches that can effectively address these challenges while ensuring sustainable forest management and biodiversity preservation

## 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)**