



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)**