

Afforestation, Definition, Status in India, Government Initiatives

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Afforestation is the process of establishing forests on land that has not been under forest cover in the recent past. It is an important environmental strategy used to restore degraded landscapes, improve ecological balance, increase carbon sequestration, reduce desertification and enhance biodiversity. Across the world, Afforestation is being adopted to address climate change, land degradation, soil erosion and declining ecosystem services. Countries such as India, China, Australia and several African nations are implementing large scale Afforestation programmes to create sustainable and climate resilient landscapes.

What is Afforestation?

Afforestation refers to planting trees and creating forests on barren, degraded, abandoned, or non forest lands where forests did not previously exist or disappeared long ago. Unlike reforestation, which restores forests in recently deforested areas, Afforestation establishes new forest ecosystems. It is commonly undertaken on abandoned agricultural fields, overgrazed lands, industrial wastelands, urban vacant spaces and desertified regions.

Afforestation in India

Afforestation has become a major component of India's environmental and climate strategy, helping expand green cover, restore degraded ecosystems and strengthen carbon sinks.

- Forest and tree cover status: According to India State of Forest Report (ISFR) 2023, India's forest and tree cover reached 8.27 lakh sq km, accounting for 25.17% of the country's geographical area. Forest cover alone stands at 7.15 lakh sq km or 21.76%, while tree cover contributes 1.12 lakh sq km or 3.41%.
- **Carbon sequestration**: India's forests currently store around 30.43 billion tonnes of carbon stock, making them one of the country's most valuable natural assets for climate change mitigation and ecological security.
- Forest growth: Since the 1950s, India has increased forest cover by nearly 30 million hectares. The country now maintains approximately 24-25% of its geographical area under forest and tree cover.
- Decadal forest cover: Forest Survey of India data shows overall forest cover increased by 21,762 sq km between 2011 and 2021. Forest cover rose from 6,92,027 sq km in 2011 to 7,13,789 sq km in 2021.
- Recent forest cover gains: Between ISFR 2019 and ISFR 2021, India's forest cover increased by 1,540 sq km. Significant gains were recorded in Andhra Pradesh (647 sq km), Telangana (632 sq km), Odisha (537 sq km), Karnataka (155 sq km) and Jharkhand (110 sq km).
- Afforestation Achievements: Under Twenty Point Programme reporting, nearly 18.94 million hectares of land were brought under Afforestation between 2011-12 and 2021-22 through coordinated efforts of central and state governments.
- Climate commitment: Afforestation supports India's climate goals by helping create an additional carbon sink. India aims to achieve a carbon sink of 2.5-3 billion tonnes of CO₂ equivalent through increased forest and tree cover.
- Bonn Challenge commitment: India pledged to restore 26 million hectares of degraded and deforested land by 2030 under the Bonn Challenge, making it one of the world's largest landscape restoration commitments.
- Mass plantation campaigns: Uttar Pradesh demonstrated large scale public participation when nearly one million people planted about 220 million trees in a single day, showcasing community driven Afforestation efforts.
- Need: Rapid **urbanisation**, land degradation, **desertification**, biodiversity loss, **climate change** impacts, declining **soil fertility** and increasing carbon emissions make Afforestation essential for India's sustainable development and ecological resilience.
- Ganga Basin Restoration: Under the Namami Gange Programme, approximately 33,024 hectares have been afforested with an expenditure of ₹414 crore to improve ecological health and biodiversity across the river basin.
- Multi Sectoral Implementation: Afforestation activities in India are undertaken through government departments, NGOs, civil society organizations, corporate bodies and local communities, ensuring a broad based approach to environmental restoration.

Afforestation Government Initiatives

India has launched multiple programmes to increase forest cover, restore degraded landscapes, improve biodiversity and strengthen climate resilience.

National Forest Policy (NFP) 1988

The key features of the **National Forest Policy 1988** has been listed below:

- National forest cover target: The policy aims to bring at least one-third of India's total geographical area under forest or tree cover to maintain ecological balance and environmental stability.
- Ecological security focus: It prioritizes conservation of natural heritage, biodiversity protection, watershed management and prevention of soil erosion across river and reservoir catchments.
- Sustainable resource management: The policy promotes sustainable forest management while balancing ecological requirements with developmental needs.
- Community participation: People's involvement in forest protection and regeneration forms a key component of the policy framework.
- Environmental conservation: The policy emphasizes maintaining environmental stability rather than maximizing revenue from forests.
- Desertification control: Forest expansion under the policy helps combat land degradation and desertification in vulnerable regions.

National Mission for a Green India (GIM)

The **Green India Mission** highlights the below discussed features:

- Climate mission status: Green India Mission is one of the eight missions under the National Action Plan on Climate Change (NAPCC).
- Ecosystem restoration: It focuses on restoring degraded forest landscapes, enhancing biodiversity and improving ecosystem services.
- Community based approach: The mission promotes Afforestation activities through active participation of local communities and stakeholders.
- Financial support: As of March 2026, ₹1,019.26 crore had been released to states under the mission for restoration and Afforestation activities.
- Rainwater conservation: The programme integrates Afforestation with rainwater harvesting and soil moisture conservation measures.
- Climate adaptation benefits: It strengthens ecological resilience while improving carbon sequestration and environmental sustainability.
- State level implementation: Funds have been released to states including Madhya Pradesh, Uttarakhand, Mizoram, Karnataka, Punjab, Uttar Pradesh and others for Afforestation projects.
- Degraded forest improvement: Special focus is given to improving forest quality rather than merely increasing forest area.

Compensatory Afforestation Fund (CAF) and CAMPA

The major features of the **Compensatory Afforestation Fund (CAF) and CAMPA** has been discussed below:

- Legal framework: The Compensatory Afforestation Fund Act was enacted in 2016, while implementation rules were notified in 2018.
- Forest diversion compensation: Agencies diverting forest land for mining, industry and infrastructure projects must finance Afforestation activities.

- Fund allocation formula: Under CAF provisions, 90% of funds are transferred to states while 10% remains with the Centre.
- Massive financial support: States received ₹8,493.68 crore during 2022-23 and ₹7,057.35 crore during 2023-24 for Afforestation and restoration activities.
- Large scale Afforestation: More than 3.20 lakh hectares underwent compensatory Afforestation between FY 2020-21 and FY 2024-25.
- Technology integration: GIS based monitoring systems, Digital Annual Plans and HARIT SANKALP platforms improve transparency and tracking.
- Wider conservation activities: Funds support wildlife management, catchment treatment, forest regeneration, village relocation and conflict mitigation.
- Major beneficiary states: Odisha, Madhya Pradesh, Maharashtra, Telangana, Jharkhand, Karnataka and Uttarakhand received substantial allocations for Afforestation programmes.

Nagar Van Yojana (NVY)

The major features of the **Nagar Van Yojana (NVY)** has been given here:

- Launch and objective: Introduced in 2020, the scheme aims to create 1,000 Nagar Vans and urban green spaces across India.
- Urban forest development: It focuses on establishing forests in cities governed by Municipal Corporations, Municipalities and Urban Local Bodies.
- Environmental improvement: Urban forests help reduce pollution, mitigate heat island effects, improve air quality and conserve biodiversity.
- Public awareness creation: The programme promotes environmental stewardship and awareness about plants and biodiversity among citizens.
- In situ conservation: It facilitates conservation of region specific flora within urban environments.
- Significant progress: By March 2026, 626 Nagar Vans and Vatikas had been supported through releases totaling ₹557.62 crore.
- Project expansion: A total of 385 projects have been sanctioned nationwide since the scheme's launch.
- Climate resilient cities: The initiative helps make cities healthier, greener and more resilient to climate change impacts.

Green Credit Programme (GCP)

The key highlighting features of the **Green Credit Programme (GCP)** has been given below:

- Innovative restoration model: Launched under Green Credit Rules 2023, the programme incentivizes voluntary environmental actions.
- Afforestation incentives: Individuals, communities and organizations receive recognition for ecosystem restoration and tree plantation activities.
- Landscape restoration: The programme supports restoration of degraded forest lands and biodiversity enhancement.
- LiFE integration: It aligns with Mission LiFE by encouraging environmentally responsible behaviour.

- Carbon sink enhancement: Afforestation under GCP contributes to increased carbon sequestration and ecological restoration.
- Land identification: By March 2026, around 4,391 hectares of degraded forest land across 12 states had been identified for restoration.

National Coastal Mission Programme

The key highlighting features of the **National Coastal Mission Programme** has been detailed here:

- Coastal ecosystem restoration: The programme supports mangrove conservation and restoration across coastal states and union territories.
- Annual action plans: Management Action Plans are prepared regularly for mangrove protection and sustainable management.
- Climate resilience benefits: Mangroves act as natural barriers against cyclones, erosion and sea level rise.
- Biodiversity conservation: Coastal Afforestation strengthens habitats for marine and coastal species.
- Carbon storage contribution: Mangrove forests serve as efficient blue carbon ecosystems.
- Ecosystem based adaptation: The programme improves resilience of coastal communities against climate related disasters.

Mission Haritha Haram

The key detailed related to the **Mission Haritha Haram** has been discussed below:

- State flagship initiative: Telangana launched Mission Haritha Haram to substantially expand green cover across the state.
- Forest cover target: The programme aims to increase green cover from 25.16% to 33% of the state's geographical area.
- Large scale plantation: Extensive plantation drives are undertaken in forests, urban areas and public lands.
- Ecological restoration: The initiative contributes to biodiversity conservation and climate resilience.
- Community participation: Local communities actively participate in plantation and protection activities.
- Sustainable development support: Increased green cover strengthens environmental sustainability and ecosystem health.

Green Wall Initiative

The key features of the **Green Wall Initiative of India** or Aravalli Restoration Programme has been discussed here:

- Aravalli restoration programme: The initiative focuses on restoring and protecting the Aravalli mountain ecosystem.
- Geographic coverage: It covers Haryana, Rajasthan, Gujarat and Delhi through a large green belt network.
- Scale of project: A 1,400 km long and 5 km wide green buffer is planned around the Aravalli range.
- Landscape restoration target: The Aravalli Green Wall Initiative aims to restore approximately 6.31 million hectares of degraded landscapes.

- Nursery infrastructure: About 435 nurseries with a capacity of 393.24 lakh seedlings have been established.
- Restoration progress: Around 36,025 hectares were restored during 2025 alone.
- Desertification control: The initiative helps prevent land degradation and dust movement in vulnerable regions.
- Biodiversity enhancement: Restored landscapes improve habitat connectivity and ecological resilience.

Afforestation Challenges

Afforestation faces multiple ecological, social, technical and economic challenges that affect long term sustainability and effectiveness.

- Species selection: Choosing inappropriate species can reduce survival rates and disrupt local ecosystems. Non native species may outcompete indigenous vegetation and affect biodiversity.
- Soil degradation: Severely degraded lands often have poor fertility, hard soil layers and nutrient deficiencies that hinder successful forest establishment.
- Water availability constraints: Limited rainfall and groundwater scarcity significantly affect sapling survival, particularly in arid and semi arid regions.
- Desertification pressures: Ongoing land degradation and desertification reduce the effectiveness of plantation efforts in vulnerable landscapes.
- Climate change impacts: Rising temperatures, changing rainfall patterns, droughts and extreme weather events affect tree growth and survival.
- Competition for land: Afforestation often competes with agriculture, urban expansion, infrastructure development and industrial activities for available land.
- Monoculture plantations: Excessive reliance on single species plantations may reduce biodiversity and create ecological imbalance.
- Community participation gaps: Lack of local involvement can weaken long term protection, maintenance and sustainability of Afforestation projects.
- Forest fire risks: Increasing frequency of forest fires threatens newly established plantations and restoration efforts.
- Monitoring challenges: Large scale Afforestation projects require continuous monitoring, maintenance and technological support to ensure long term success.

Afforestation Significance

Afforestation provides ecological, economic, climatic and social benefits that contribute significantly to sustainable development and environmental security.

- Carbon sequestration: Trees absorb atmospheric carbon dioxide and store carbon in biomass and soils, helping mitigate climate change. Studies indicate large scale Afforestation could remove over 191 gigatons of carbon by 2100.
- Climate regulation: Forests regulate temperature, rainfall patterns and local climatic conditions while reducing the impacts of global warming.
- Soil conservation: Tree roots reduce soil erosion, improve soil structure, enhance fertility and increase nitrogen fixation in degraded landscapes.

- Desertification control: Afforestation stabilizes land surfaces and helps prevent the expansion of deserts and barren areas.
- Water quality improvement: Forests reduce runoff, improve groundwater recharge and act as natural filters that enhance water quality.
- Biodiversity conservation: New forests create habitats for birds, insects, mammals and other wildlife, strengthening ecosystem diversity.
- Dust storm prevention: Shelterbelt plantations reduce wind speed, protect agricultural fields and control dust storms in arid regions.
- Livelihood generation: Afforestation provides employment opportunities and supports sustainable income through forestry related activities.
- Food and economic benefits: Plantation of fruit bearing and economically valuable trees can provide food, fuelwood and revenue for local communities.
- Urban environmental improvement: Urban Afforestation improves air quality, reduces noise pollution, provides shade and lowers urban heat island effects.
- Disaster resilience: Forest ecosystems strengthen resilience against floods, droughts, landslides and other environmental hazards.
- National sustainability goals: Afforestation supports biodiversity conservation, land restoration, climate commitments and long term ecological security while contributing to sustainable development objectives.

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