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CLIMATE AND FOREST SCHEMES 2026 PRELIMS

The Union Government's budget and policy framework for **2025–2026** significantly prioritise green growth and forest restoration, with an allocated budget of **₹3,413 crore** for the Ministry of Environment, Forest and Climate Change (MoEF&CC).

1. National Mission for a Green India (GIM): A cornerstone of India's National Action Plan on Climate Change (NAPCC). For 2025–26, it maintains a focused allocation of **₹220 crore** for afforestation and forest fire management.

The **National Mission for a Green India (GIM)** is one of the eight core missions launched under India's **National Action Plan on Climate Change (NAPCC)**. It is structured as a **Centrally Sponsored Scheme (CSS)** and serves as a **flagship scheme** for India's forestry and carbon-sequestration goals.

Ministry & Implementing Agencies

- **Nodal Ministry:** Ministry of Environment, Forest and Climate Change (MoEFCC).
- **National Level Agency:** GIM Mission Directorate.
- **State Level Agency:** State Forest Development Agencies (SFDA).
- **District Level Agency:** Forest Development Agencies (FDA).
- **Village Level Agency:** Joint Forest Management Committees (JFMCs) and **Gram Sabhas**.
- **Urban Level Agency:** Resident Welfare Associations (RWAs) alongside Municipal Corporations.

Aims & Objectives

The mission focuses on a **holistic ecosystem approach** combining climate change mitigation and adaptation:

- **Forest Cover Expansion:** Increase forest/tree cover on **5 million hectares (mha)** of forest and non-forest land.
- **Quality Enhancement:** Improve the health and canopy density of another **5 million hectares** of degrading forest lands.
- **Carbon Sequestration:** Enhance annual mitigation by **50–60 million tonnes** to aid India's Nationally Determined Contributions (NDC).
- **Livelihood Support:** Secure and improve forest-based income for **3 million households** living in fringe areas.

Core Features & Funding Mechanism

- **Micro-Ecosystem Approach:** Focuses on fragile zones including the **Aravallis, Western Ghats, and the Indian Himalayan Region**.
- **Decentralised Governance:** Employs a **bottom-up planning** model where village communities design local micro-plans.

- **Broad Spectrum Greening:** Targets diverse landscapes including mangroves, wetlands, urban spaces, and agroforestry areas.
- **Funding Splits:** Financed via a **Centrally Sponsored** model where the Center and States share costs (typically 60:40 for general states, 90:10 for Northeast/Himalayan states).
- **Budget Convergence:** Merges financial outlays with MGNREGA and **CAMPA** (Compensatory Afforestation Fund Management and Planning Authority) resources.

Achievements (Updated to 2026)

- **Budgetary Boost:** The Union Budget for FY 2026–27 allocated **₹170 crore** directly to the Green India Mission.
- **Global Standing:** Enabled India to climb to **9th place globally** in total forest area, according to the **FAO Global Forest Resources Assessment 2025**.
- **Total Green Canopy:** Pushed India's total forest cover to **7,13,789 sq km**, marking **21.71%** of the country's total geographic area.
- **Ecosystem Milestones:** Synergised with massive wetland and mangrove restoration expansions, elevating India's total **Ramsar Sites to 98** as of early 2026.
- **Ground Restoration:** Over **1.8 million hectares** of degraded land have been successfully restored across 17 participating States and Jammu & Kashmir.

Criticisms & Challenges

- **Underutilization of Funds:** Parliamentary and TERI evaluation reports highlight a persistent trend where the ministry leaves its core ecological and GIM allocations underutilized due to capacity bottlenecks.
- **Skewed Policy Focus:** Environmental analysts point out that while industrial and energy portfolios receive major budgetary surges, core adaptation programs like GIM receive minimal increases.
- **Monoculture Monopolization:** Critics argue that the afforestation drives occasionally rely on commercial monoculture species rather than diverse native varieties, impacting local biodiversity.
- **Data Transparency:** Independent climate auditors continue to demand a unified, transparent **"Climate Budget"** since GIM funding remains hidden across complex ministerial tables

2. Green Credit Programme (GCP): Formally operationalised to incentivise voluntary environmental actions. It allows public and private entities to earn "Green Credits" for **restoring degraded forest lands**, which can later be used for compensatory afforestation requirements.

The **Green Credit Programme (GCP)** is an innovative, market-based mechanism launched by India to incentivize voluntary environmental actions across diverse sectors.

Ministry and Implementing Agency

- **Ministry:** Operating under the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.

- **Implementing Agency:** The **Indian Council of Forestry Research and Education (ICFRE)** serves as the GCP Administrator, directly running, monitoring, and operating the system.

Scheme Classification

- **Central Sector Scheme:** It functions as a **Central Sector Scheme**, meaning it is 100% funded and designed by the Central Government, rather than being a cost-shared centrally sponsored scheme.
- **Umbrella Scheme:** It operates as an **umbrella framework** designed to cover 8 distinct environmental pillars over time. It is heavily aligned with India's **Mission LiFE** (Lifestyle for Environment) global flagship movement.

Aims and Objectives

- **Incentivize Voluntary Action:** Create a domestic market where individuals, communities, and private sectors earn tradable financial credits for pro-planet activities.
- **Restore Degraded Land:** Build a functional national land bank of degraded forests and public parcels for targeted eco-restoration.
- **Supplement International Commitments:** Aid India's **Nationally Determined Contributions (NDCs)** under the Paris Agreement by boosting carbon sequestration, cooling, and biodiversity.

Funding Mechanism

- **Private and Corporate Capital:** Funded entirely by participants, primarily through **Corporate Social Responsibility (CSR)** budgets, ESG allocations, and public sector undertakings (PSUs) looking to offset obligations.
- **Fee-Based Model:** Operational costs are sustained through registration and verification fees submitted by applicants to the ICFRE.

Core Features (Updated as of 2026)

- **Eight Focal Sectors:** Tree plantation, water management, sustainable agriculture, waste management, air pollution reduction, mangrove conservation, Ecomark labeling, and sustainable infrastructure.
- **Outcome-Based Logic (Revised 2025/2026 Framework):** Following key policy revisions, the scheme shifted from a simple "plant-and-count" input metric to strict outcome metrics. Credits are now issued **only after 5 years** of site restoration, conditional on achieving a **minimum of 40% canopy density** and verified tree survival.
- **Fungibility:** Earned credits can be exchanged to fulfill national compliance targets, such as **Compensatory Afforestation** or corporate ESG mandates.
- **Digital Portal Architecture:** A streamlined digital workflow manages land bank registrations, third-party verifications, and credit issuance transparently.

Key Achievements

- **Dynamic Land Banking:** Over 5,200 hectares of degraded forest lands across multiple states (including Gujarat, Madhya Pradesh, and Rajasthan) have been mapped and registered into the national portal.

- **Active PSU Participation:** Major public sector enterprises (e.g., Indian Oil Corporation Limited) have registered and pledged over ₹56 crores for eco-restoration blocks.
- **Policy Maturity:** Successfully transitioned from loose initial guidelines to a legally sound, rigorous verification mechanism that ensures long-term ecological survival over short-term PR metrics.

Criticisms and Concerns

- **Forest Diversion Risks:** Environmentalists argue that allowing corporations to buy plantation credits to meet **Compensatory Afforestation** duties could encourage the destruction of existing natural forests in exchange for monoculture plots.
- **Threats to Grasslands & Scrublands:** The broad categorization of "degraded land" risks exposing highly biodiverse open natural ecosystems (scrublands, grasslands) to unscientific tree-planting.
- **Risk of Greenwashing:** Critics highlight that without continuous, strict regulatory oversight, the voluntary platform could let big polluters buy credits to appear eco-friendly without changing carbon-heavy operations.
- **Double Counting Dilemma:** Companies face persistent regulatory ambiguity regarding whether a single block can claim both Green Credits and international Carbon Credits.
- **Field Implementation Errors:** Internal tracking reports have occasionally exposed unscientific execution, including delays in state-level fund flows and trying to plant trees on rocky or already dense canopy plots

3. MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes): Focused on mangrove restoration along India's coastline. In 2025, it successfully restored over **4,500 hectares** of mangroves

The **MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes)** scheme is a **Central Government scheme** executed through a **financial convergence model** rather than a standard standalone Central Sector or Centrally Sponsored funding route. It functions as a **flagship green growth initiative** spearheaded by India's **Ministry of Environment, Forest and Climate Change (MoEFCC)**.

Administrative & Operational Structure

- **Nodal Ministry:** Ministry of Environment, Forest and Climate Change (MoEFCC).
- **Implementing Agency:** The **State Forest Departments** hold direct responsibility, executing tasks in cooperation with **local communities**, Van Suraksha Samitis (VSS), and Eco-Development Committees (EDC).
- **Scheme Type:** It is classified as a national **flagship program** under India's Budget "Green Growth" priority, running for a 5-year timeline from **FY 2023–24 to FY 2027–28**.
- **Funding Mechanism:** There is no dedicated independent budget head. It relies entirely on a **convergence funding strategy**:

- **70% of allocations** are sourced through the **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)**.
- **30% of allocations** are drawn through the **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** and corresponding state-level plans.
- **Gap Funding** is provided directly through National CAMPA when necessary.

Aims, Objectives, and Core Features

Aims and Objectives

- **Restore Mangrove Cover:** Revive degraded shoreline ecosystems over approximately **540 sq. km.** across 11 states and 2 Union Territories.

- **Climate Mitigation:** Scale carbon sequestration to align with India's NDC goal of creating an additional 2.5–3 billion tonnes of equivalent sink by 2030.
- **Disaster Resilience:** Expand coastal bio-shields to mitigate cyclonic impacts, coastal erosion, and tidal storm surges.
- **Economic Upliftment:** Incentivise conservation by creating tangible livelihood streams for seaside populations.

Key Features

- **Scientific Afforestation:** Utilising site-specific, local mangrove species and advanced seed-dibbling or ditch-digging planting methods.
- **Participatory Conservation:** Engaging local youth, self-help groups (SHGs), and traditional fishers for nursery cultivation and site surveillance.
- **Livelihood Diversification:** Launching parallel activities like commercial mangrove honey production, aquaculture, and nature ecotourism.
- **Digital Monitoring:** Enforcing real-time inspection protocols requiring geo-tagged media and .kml tracking files mapped by the Forest Survey of India (FSI).

Achievements (As of 2026)

- **Restoration Progress:** Over **22,560 hectares** of degraded mangrove and salt pan lands have been successfully brought under active conservation.
- **Funding Mobilisation:** Upwards of **₹88.44 crore** has been formally cleared through National CAMPA directly to state execution units.
- **Leader State: Gujarat** has emerged as the clear performance leader, rapidly scaling project sites to encompass nearly **19,220 hectares** (roughly 85%) of the total domestic territory targeted so far.
- **Employment Creation:** Generated millions of man-days of local employment via integrated MGNREGS convergence tasks.

Criticisms and Core Challenges

- **Extreme Regional Imbalance:** Roughly **85% of execution is concentrated solely in Gujarat**. Critical high-biodiversity zones like West Bengal's Sundarbans (which accounts for over 40% of India's baseline mangrove asset) have seen negligible coverage under the scheme.
- **Fragmented Funding Vulnerability:** Relying heavily on the convergence of separate schemes (like MGNREGS and CAMPA) leads to severe administrative bottlenecks, payment delays, and mismatched field priorities.
- **Monoculture Survival Risks:** Critics point out that some state targets focus heavily on fast-growing varieties, compromising the natural multi-species biodiversity required for a stable resilient ecosystem.
- **Market Linkage Gaps:** Alternative income models (e.g., honey collection or ecotourism infrastructure) continue to lack robust supply chain integration, leaving local long-term financial benefits unrealised

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4. Aravalli Green Wall Initiative: A massive landscape restoration project targeting **6.31 million hectares** across Rajasthan, Gujarat, Haryana, and Delhi. A detailed action plan was unveiled in May 2025 to restore ecological integrity through 2034.

The **Aravalli Green Wall Project** is a mega-ecological initiative launched by the Union Environment Ministry to combat desertification, land degradation, and climate change. It establishes a massive **1,400 km long and 5 km wide green belt buffer** along the ancient Aravalli Mountain Range spanning four states/UTs: **Delhi, Haryana, Rajasthan, and Gujarat**.

Core Governance & Structural Framework

- **Nodal Ministry**: It functions directly under the Ministry of Environment, Forest and Climate Change (MoEFCC).
- **Implementing Agency**: The **State Forest Departments** of the respective states (Delhi, Haryana, Rajasthan, Gujarat) act as the nodal implementing agencies. Implementation relies on Divisional Forest Officers (DFOs) across 29 designated districts.
- **Scheme Classification**: It is not classified as an independent Central Sector or Centrally Sponsored scheme. Instead, it operates as a **centrally coordinated landscape restoration campaign**. It serves as a major **Umbrella/Flagship Framework** designed to converge existing green infrastructure schemes.

Aims & Objectives

- **Combating Desertification**: To act as a natural geological shield against the eastward march of the Thar Desert into fertile plains.
- **Land Restoration**: To rejuvenate degraded forest lands, scrublands, and wastelands across the 700-km range.
- **Global Targets**: To fulfill India's international pledges under the United Nations Convention to Combat Desertification (UNCCD) to restore 26 million hectares of degraded land.
- **Carbon Sequestration**: To create vital carbon sinks to meet Nationally Determined Contributions (NDCs) under the UNFCCC.
- **Water Security**: To recharge dying aquifers, check soil erosion, and revive surface water bodies.

Funding Mechanism

The initiative uses a **multi-stream convergence funding mechanism** rather than a single dedicated budget head. It pulls fiscal resources from:

1. **CAMPA Funds** (Compatory Afforestation Fund Management and Planning Authority).
2. **MGNREGA** (Mahatma Gandhi National Rural Employment Guarantee Act) for local manual labour.

3. **National Mission for a Green India (GIM)**.
4. **State-level budgetary allocations** and Corporate Social Responsibility (CSR) contributions.

Key Features

- **Ecological Buffer**: Focuses on a 5-kilometre buffer zone surrounding the range, expanded into a holistic integrated landscape approach.
- **Indigenous Afforestation**: Massive nursery setups (targeting 1,000 permanent nurseries) focusing entirely on **native, climate-resilient flora**.
- **Hydrological Focus**: Direct alignment with water conservation by integrating *Amrit Sarovars* and restoring local wetlands/ponds.
- **Community-Led Eco-Tourism**: Development of nature parks, trekking routes, and eco-safaris to create direct livelihood opportunities.
- **Tech-Driven Transparency**: Complete integration of satellite mapping, remote sensing, and geo-tagged plantation tracking.

Status Update & Achievements (As of 2026)

- **Detailed Action Plan (DAP)**: MoEFCC operationalized the comprehensive DAP for the Aravalli Landscape Restoration, charting targets through 2034.
- **Plantation & Acreage Milestones**: Reclaimed over **36,025 hectares of degraded land** and executed the planting of more than **393.24 lakh seedlings**. Green work has successfully expanded onto 2.7 million hectares of the broader landscape.
- **Legal Shielding**: A historic policy intervention led the Haryana government to designate **97 square kilometres** of highly degraded Aravalli revenue land (stretching from Naurangpur to Nuh) as a legally **Protected Forest**.
- **Campaign Synergy**: Deeply aligned with the massive citizen-led *'Ek Ped Maa Ke Naam'* afforestation drive, utilizing community eco-task forces to amplify survival rates.
- **Water-body Rejuvenation**: Dozens of historical lakes, ponds, and check dams across the Delhi-NCR and Haryana belts have successfully undergone structural de-siltation.

Criticisms & Ecological Challenges

- **Low Sapling Survival Rates**: Environmental audits and Comptroller and Auditor General (CAG) assessments highlight that long-term survival rates for target areas often plateau between **6% to 30%** due to intense arid heat.

- **Invasive Species Menace**: Large portions of the landscape remain choked by *Prosopis juliflora* (Vilayati Kikar). Critics argue that the initiative does not allocate enough resources toward uprooting this invasive weed before planting native trees.
- **Legal & Boundary Deficits**: The definition and physical demarcation of the Aravalli hills have faced prolonged judicial and bureaucratic friction. The Supreme Court's shifting stances on restrictive elevation definitions have left many ecologically sensitive zones vulnerable to real-estate encroachments.
- **Illegal Mining & Enforcement Gaps**: Despite state bans, illegal stone and marble mining persists along the Rajasthan-Haryana borders, physically fracturing the very hills meant to anchor the green wall.
- **Open-Pasture Friction**: Local agrarian communities rely heavily on open common lands (*Gauchar*) for livestock grazing. Fencing off these lands for intense afforestation without alternate pasture plans has triggered local economic friction.

5. Forest Fire Prevention and Management (FFPM): A centrally sponsored scheme providing critical funds to states for preventing and controlling forest fires.

The **Forest Fire Prevention and Management (FFPM) Scheme** is India's only centrally funded program specifically dedicated to assisting states and Union Territories in dealing with forest fires. It was launched in December 2017 by revamping the erstwhile *Intensification of Forest Management Scheme (IFMS)*.

Core Structural Classification

- **Nodal Ministry:** Operated under the Ministry of Environment, Forest and Climate Change (MoEF&CC).
- **Implementing Agencies:** At the central level, the **Forest Protection Division** of the MoEF&CC coordinates the scheme, collaborating with central institutes like the Forest Survey of India (FSI) and the Indian Council of Forestry Research and Education (ICFRE). At the ground level, **State and UT Forest Departments** are the primary execution agencies.
- **Scheme Type:** It is a **Centrally Sponsored Scheme (CSS)**. It is an independent, dedicated scheme rather than a massive multi-sectoral umbrella framework, though states have the flexibility to align its execution with related programs like the Green India Mission.

Funding Mechanism

The scheme operates on a cost-sharing formula between the Central Government and State Governments:

- **90:10 Ratio:** For the Northeast region and Western Himalayan states (e.g., Uttarakhand, Himachal Pradesh, Jammu & Kashmir).
- **60:40 Ratio:** For all other states.
- **100% Central Funding:** For Union Territories.

Aims and Objectives

- **Minimise Hazards:** Substantially reduce the vulnerability of diverse Indian forest ecosystems against active fire hazards.
- **Community Empowerment:** Inform, enable, and empower forest fringe communities to work in tandem with State Forest Departments.
- **Ecosystem Restoration:** Help restore the ecological productivity and biodiversity of forest areas affected by severe fire incidents.
- **Technological Integration:** Develop advanced fire danger rating systems and push real-time forecasting models.

Key Features

- **Satellite Monitoring:** Integrates real-time alerts through the Forest Survey of India's (FSI) satellite-based **Forest Fire Monitoring and Alert System**, pushing SMS/email alerts directly to registered ground staff.
- **Local Traditional Actions:** Funds traditional methods such as the creation and maintenance of **forest fire lines**, engaging local seasonal fire watchers, and clearing dry surface litter.
- **Water Infrastructure:** Builds water storage structures and check-dams deep within forest zones to ensure quick dousing capabilities.
- **Inter-Agency Coordination:** Works in sync with the National Disaster Management Authority (NDMA) and National Disaster Response Force (NDRF) to deploy specialised teams for large forest fires.

Key Updates & Progress (As of 2026)

- **Rise in Fire Incidences:** Parliamentary and ministry records show a rising trend in fires; overall satellite-detected fire counts grew from **2,03,544** (2023–24 fire season) to **2,38,309** (2024–25 fire season).
- **Parallel Relief Funds:** In January 2025, the central High-Level Committee separately approved a **₹818.92 crore Mitigation Scheme for Forest Fire Risk Management** via the National Disaster Mitigation Fund (NDMF) to support 144 high-priority districts across 19 states, reinforcing the FFPM framework.
- **Technological Directives:** A Parliamentary Committee review in **March 2026** formally urged the MoEF&CC to rapidly shift the scheme's focus toward **AI-driven predictive modelling, drone-based thermal imaging, and automated satellite early detection systems**.

Scheme Performance Evaluation

Achievements	Criticisms & Challenges

Real-Time Alerts: Successful rollout of pre-fire (one-week advance) and near real-time alerts by FSI to thousands of field personnel.	**Budgetary Constraints & Fluctuation:** The core FFPM fund allocations have historical fluctuations, occasionally restricting long-term preventive infrastructure planning.
Community Synergy: Integration of Joint Forest Management Committees (JFMCs) and Eco-Development Committees (EDCs) with formal financial incentives.	**Utilization Delays:** Several states face standard bureaucratic delays in uploading Utilization Certificates (UCs), causing the temporary halting of subsequent fund releases.
Institutional Capacity: Specialised tactical training of co-ordinated NDMA/NDRF teams specifically equipped for high-intensity forest operations.	**Alert Granularity:** The alert system sometimes catches non-forest biomass or agricultural slash-and-burn, causing misallocated response efforts.
Targeted Infrastructure: Thousands of kilometres of fire lines created and maintained across vulnerable fire-prone ranges annually.	**Neglected Post-Fire Care:** High focus remains strictly on active suppression, leaving soil stabilization and ecological post-fire management underfunded.

6. National Carbon Market: India is set to launch its **National Compliance Carbon Market** by mid-2026, transitioning industries from the older "Perform, Achieve and Trade" (PAT) system to a more robust trading framework.

The **Indian Carbon Market (ICM)**, regulated through the **Carbon Credit Trading Scheme (CCTS)**, is a regulatory mechanism designed to price and trade greenhouse gas (GHG) emissions. It serves as a statutory framework under the **Energy Conservation (Amendment) Act, 2022**.

Aims & Objectives

- **Reduce Intensity:** Lower the GHG emission intensity of India's GDP by **45% by 2030** from 2005 baselines.
- **Mobilise Capital:** Drive private sector and foreign investments into clean technologies, energy transition, and carbon offsets.
- **Establish Compliance:** Create a robust internal carbon pricing mechanism for energy-intensive domestic industries.

- **Global Alignment:** Facilitate bilateral and international emission unit trading under Article 6 of the Paris Agreement.

PIB +6

Ministry & Implementing Agencies

- **Nodal Ministries:** The scheme is jointly managed by the **Ministry of Power (MoP)** as the overall policy custodian, and the **Ministry of Environment, Forest and Climate Change (MoEFCC)**, which notifies emission targets.
- **Administrator (Implementing Agency):** The **Bureau of Energy Efficiency (BEE)** serves as the market administrator responsible for developing benchmarks, targets, and issuing Carbon Credit Certificates (CCCs).
- **Registry Operator: Grid Controller of India Limited (GCI)** operates the meta-registry to maintain account databases.
- **Market Regulator:** The **Central Electricity Regulatory Commission (CERC)** regulates trading rules and registries on power exchanges.

Scheme Classification

- **Central Sector Scheme:** It is structurally a **Central Sector Scheme** designed, regulated, and managed 100% by the Central Government of India without funding splittages to states.
- **Umbrella Framework:** It acts as an **umbrella market mechanism**. It transitions and absorbs previous independent mechanisms, notably the **Perform, Achieve, and Trade (PAT) scheme** (energy savings certificates) and the **Renewable Energy Certificate (REC) framework**.

Funding Mechanism

- **Self-Sustaining Operations:** The financial implementation of the CCTS does not rely on regular budgetary grants. It is financed through **fees and service charges** collected by the BEE from participating obligated entities, along with the BEE's internal pooled resources.
- **Market Pricing:** The cash flow for projects is generated purely via market-driven trade of CCCs between deficient and surplus emission entities.
- **Stability Fund:** The government maintains a specialized market stabilization reserve fund to control extreme credit price volatility.

Core Features

- **Dual Markets:** Functions via two distinct streams: a mandatory **Compliance Market** for large industries and a **Voluntary Offset Market** for non-obligated entities.
- **Trading Denomination:** Each issued Carbon Credit Certificate (CCC) explicitly represents **one metric tonne of CO_2 equivalent (tCO_2e)** reduced or removed.
- **Exchange Trading:** Transactions take place through authorized domestic power exchanges regulated by CERC. Over-the-counter (OTC) trades remain barred.

- **Strict Penalty Structure:** Under the GHG Intensity Rules, defaulting entities that fail to meet targets must pay financial penalties equal to **twice the market value** of their carbon credit deficit.
- **MRV Framework:** Backed by an annual, structured Measurement, Reporting, and Verification protocol managed by Accredited Carbon Verification Agencies (ACVAs).

Status & Achievements (As of 2026)

- **Portal & Platform Launch:** The centralized **Indian Carbon Market Portal** was launched alongside the *Prakriti 2026* international carbon conference to register and track climate finance and credits.
- **Broadened Sector Coverage:** Obligated targets expanded to transition over **490 major industrial units** spanning 9–13 high-emission sectors (including cement, aluminium, and textiles) out of the legacy PAT system.
- **Article 6 Integration:** The **National Designated Authority (NDA)** became fully operationalized under MoEFCC to authorize international transfers of mitigation outcomes (ITMOs).
- **Methodology Approvals:** The MoP cleared multiple voluntary offset methodologies, opening doors for agroforestry, green hydrogen, and mangrove conservation projects to earn tradable credits.

Criticisms & Vulnerabilities

- **Target Dilution:** Policy think tanks (like CEEW) note that delays in final rules led to relaxed, easily achievable intensity baselines for heavy industries like cement and aluminium. This risk could flood the market with cheap credits and collapse pricing.
- **Sovereignty/Export Friction:** Major sectors face readiness gaps regarding the European Union's Carbon Border Adjustment Mechanism (CBAM), creating compliance friction for exporters due to a massive carbon price gap between India and the EU.
- **Exclusion of Core Emitters:** Key critics point out that despite expansions, critical components of heavy thermal power and certain core manufacturing lines remain loosely bound or deferred from strict limits.
- **Community Rights & Permanence:** Projects face environmental additionality queries. Satellite-driven forestry credits often suffer from measurement errors, lack of tangible benefit transfers to local tribal communities, and climate risks (e.g., forest fires wiping out credits).
- **MSME Cost Burdens:** Small and medium enterprises lack the technical and financial capacity required to navigate complex MRV structures, keeping them locked out of credit benefits

7. Carbon Capture, Utilisation, and Storage (CCUS): The government has earmarked **₹20,000 crore over five years** (starting in 2026) to support CCUS technologies in high-emission sectors like steel and cement.

The **Carbon Capture, Utilisation, and Storage (CCUS) Scheme** is a newly elevated **Central Sector Scheme** launched as a major policy initiative under the **Union Budget 2026–27** with a dedicated five-year

outlay of **₹20,000 crore**. It functions as a structured national technology deployment program, shifting India's carbon management from localized research to scaled commercial application.

Aims & Objectives

- **Industrial Decarbonisation:** Target deep emission cuts across five "hard-to-abate" sectors: **Power, Steel, Cement, Refineries, and Chemicals**.
- **Net-Zero Alignment:** Establish a pathway to capture **750 million tonnes of annually by 2050** to help meet India's Net-Zero by 2070 climate pledge.
- **Avoid Export Barriers:** Empower domestic manufacturers to produce low-emission goods, shielding Indian exports from international carbon regulations like the European Union's Carbon Border Adjustment Mechanism (CBAM).
- **Resource Circularity:** Convert captured into high-value products like green methanol, chemicals, building materials, and synthetic fuels.

Nodal Ministry & Implementing Agency

- **Nodal Ministry:** Coordinated under the **Ministry of Power** as the primary nodal agency for nationwide execution, working alongside the Ministry of Science & Technology, Ministry of Steel, and Ministry of Petroleum and Natural Gas.
- **Implementing Agencies:** The **Department of Science and Technology (DST)** drives technological testbeds, while public sector undertakings like **NTPC, ONGC, and IOCL** deploy the industrial pilots. Policy design and roadmap monitoring are overseen by **NITI Aayog**.

Scheme Nature & Structure

- **Central Sector Scheme:** It is 100% funded directly by the Central Government of India.
- **Scheme Type:** It serves as a **Flagship Scheme** specifically tailored for industrial transition and deep carbon management within the country's climate-action architecture.

Funding Mechanism

- **Fiscal Outlay:** A central budget of **₹20,000 crore** allocated over a five-year cycle (2026–2031).
- **Initial Funding:** An initial token allotment of **₹500 crore** has been deployed to jumpstart immediate research and infrastructure foundations.
- **Viability Gap Funding (VGF):** Incorporates a structured VGF mechanism and tax incentives covering up to 50–100% subsidies to offset high initial capital risks for coal-based and heavy manufacturing enterprises.

Core Features

- **Sectoral Focus:** Structured focus strictly limited to high-emitting industrial clusters.
- **CCUS Hubs & Clusters:** Developing centralized infrastructure (such as planned hubs in Gujarat and Odisha) where multiple nearby facilities share a collective network for carbon transport and storage.

- **Carbon Market Integration:** Seamlessly linked with the domestic **Carbon Credit Trading Scheme (CCTS)**, letting industries monetize captured emissions via compliance carbon markets.
- **Green Standards Alignment:** Connects directly with India's Green Steel Taxonomy, assigning star-ratings to metal factories utilizing CCUS.

Key Achievements (As of 2026)

- **National R&D Roadmap:** The comprehensive *R&D Roadmap to Enable India's Net Zero Targets through CCUS* was officially published, outlining clear steps up to 2050.
- **National Centers:** Operationalized **National Centres of Excellence** in Carbon Capture at premier institutions like IIT Bombay and JNCASR Bengaluru.
- **Active Infrastructure:** Established **five carbon capture utilization testbeds** across the country to model real-world application efficiency.
- **Successful Pilots:** NTPC Vindhyachal successfully validated its carbon-to-methanol facility, and ONGC advanced its Enhanced Oil Recovery (EOR) pilot at Ankleshwar.

Major Criticisms & Challenges

- **High Economic Penalty:** Carbon capture infrastructure remains capital-intensive, increasing factory operational costs and potentially driving up base consumer electricity rates by 60% to 80%.
- **Energy Drawbacks:** Operating a CCUS facility causes an "energy penalty," requiring 15% to 25% of a plant's entire energy generation just to power the capture machinery.
- **Infrastructure Bottlenecks:** India lacks high-pressure pipeline corridors necessary to safely transfer massive volumes from inland industrial centers to underground reservoirs.
- **Geological Storage Uncertainty:** Most of India's storage potential lies within deep Basalt formations (Deccan Traps). Injecting high-pressure gas into basalt is highly complex, poorly tested globally, and carries minor seismic shift risks.
- **The "Band-Aid" Argument:** Climate analysts argue that massive financing for CCUS acts as an artificial life-support system for coal dependency, diverting vital funds away from immediate solar, wind, and battery storage scale-ups

8. Mission Mausam: Launched with an outlay of **₹2,000 crore (2024–2026)** to enhance weather forecasting and make India "climate-smart" through advanced modeling.

Mission Mausam is a comprehensive, nationwide initiative launched by the Government of India to make the country **"Weather-Ready and Climate-Smart"** by modernising weather tracking, forecasting, and warning

systems. Officially operational since November 2024, Phase-I runs through March 2026, with Phase-II structured to continue through 2031.

Core Institutional & Financial Framework

- **Nodal Ministry & Implementation:** Driven by the Ministry of Earth Sciences (MoES), with core implementation led by the India Meteorological Department (IMD), NCMRWF, and IITM, alongside support from ISRO and others.
- **Scheme Type & Funding:** A 100% funded **Central Sector Scheme** categorized as an **Umbrella Scheme**, boasting an initial ₹2,000 crore outlay for the two-year, Phase-I rollout.

Aims, Objectives & Technical Features

- **Hyperlocal Focus:** Aims for a high-resolution 5x5 km grid forecast, upgrading from 12-km, with hourly nowcasting for severe weather.
- **Infrastructure Boost:** Deploys 53 Doppler Weather Radars (DWRs), 60 radiosonde stations, and new monitoring tools.
- **Advanced Technology:** Integrates AI/ML with high-performance computing (HPC) and features specialized labs for cloud physics and weather modification research.

Status & Key Achievements (As of 2026)

- **Digital Tools & Accuracy:** The launch of **"Mausamgram"** provides localized, block-level forecasts, significantly improving prediction reliability, supported by a rapid expansion of Doppler Weather Radars (DWRs) and specialized monitoring infrastructure.
- **Sector Impact:** The mission has bolstered specialized forecasts tailored for the agricultural and coastal fishing sectors.

Criticisms & Structural Challenges

- **Governance & Access:** Key concerns center on the absence of a comprehensive national framework for weather modification/geoengineering and the need for greater transparency regarding access to raw meteorological data.
- **Actionable Intelligence:** Challenges remain in translating high-resolution technical forecasts into actionable, localized information for the general public

9. PM Surya Ghar: Muft Bijli Yojana: A major push for rooftop solar aimed at **1 crore households**, receiving a massive allocation of **₹26,549 crore** in the 2025–26 budget to reduce carbon footprints.

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The **PM Surya Ghar: Muft Bijli Yojana** is a **Central Sector Scheme** and a high-profile **flagship scheme** overseen by the Ministry of New and Renewable Energy (MNRE).

Aims & Objectives

- Provide up to **300 units of free electricity** monthly to beneficiary households.
- Install residential rooftop solar (RTS) systems in **1 crore households** across India by March 2027.
- Reduce the financial burden of power bills for poor and middle-class families.
- Boost domestic manufacturing under the Aatmanirbhar Bharat initiative by requiring Indian-made solar cells and modules.

Funding Mechanism

- **Total Outlay**: Approved with a financial outlay of **₹75,021 crore**.
- **Central Financial Assistance (CFA)**: The government directly finances the bulk of the program, setting aside ₹65,700 crore for direct consumer subsidies.
- **Concessional Financing**: Beneficiaries can secure low-interest, collateral-free bank loans (capped at Repo rate + 0.5%) to cover remaining upfront costs.

Core Features

- **Direct Subsidy Structure**: Offers **60% subsidy** for systems up to 2 kW, and **40% additional subsidy** for capacities between 2 kW and 3 kW. Subsidies translate to ₹30,000 for 1 kW, ₹60,000 for 2 kW, and a maximum of ₹78,000 for 3 kW installations.
- **Digital Automation**: Applications, technical feasibility checks, vendor registrations, and subsidy transfers are fully managed via the National Portal.
- **Model Solar Villages**: Dedicates ₹800 crore to develop **one Model Solar Village per district** to champion rural renewable adoption.
- **Discom & Local Incentives**: Offers ₹4,950 crore in financial incentives to Power Distribution Companies (Discoms) and ₹1,000 crore to Urban Local Bodies/Panchayats for fast-tracking installations.

Implementing Agency

- **National Level**: Managed by the National Programme Implementation Agency (NPIA).
- **State Level**: Implemented by State Implementation Agencies (SIAs), which primarily consist of local Discoms and state power departments.

Progress & Achievements (As of Mid-2026)

- **Household Target**: Over **34.3 lakh households** have adopted rooftop solar since launch, with over **31.1 lakh households** actively receiving benefits as of early 2026.
- **Capacity Additions**: The scheme has driven a structural surge, adding over **9.56 GW of rooftop solar capacity** across the nation.
- **Financial Disbursements**: The government has disbursed over **₹13,465 crore in direct subsidies** to citizens.
- **Zero Bills**: Roughly **45% to 50% of completed installations** report achieving net-zero electricity bills.
- **Livelihood & Climate**: The scheme has created an estimated **17 lakh direct green jobs** in manufacturing, sales, and operations and is on track to mitigate **720 million tonnes of emissions** over its 25-year life cycle.

Key Criticisms & Challenges

- **Equity and Inequality Gaps**: Independent reviews note a lack of targeted income demographic data. The reliance on a digital portal and partial upfront financing means subsidies heavily skew toward **affluent, urban middle-class families** rather than rural, energy-poor households.
- **Discom Resistance & Financial Strain**: The influx of residential solar causes a "duck curve" phenomenon, where Discoms act as unpaid grid-storage facilities. Discoms face revenue drops because profitable daytime residential consumers are leaving the traditional grid.
- **Quality & Safety Risks**: The explosion of new private vendors has led to an industry shortage of certified, trained installers. Many residential rooftops exhibit subpar infrastructure, poorly secured mounting, and a complete lack of basic perimeter safety corridors.
- **Administrative Hurdles**: Beneficiaries in several states complain of lengthy net-metering configuration bottlenecks, billing errors, and state-level subsidy disbursement delays

10. Summary of Budgetary Allocations (2025-26)

Scheme/Mission	Focus Area	2025-26 Budget Estimate
Green India Mission	Afforestation & Restoration	₹220 Crore
Control of Pollution	Air/Water Quality (NCAP)	₹859 Crore
National Coastal	Mangroves & Coastal	₹2 Crore (reduced)

Mission	Protection	
Project Tiger & Elephant	Wildlife Conservation	Included in Environment/Forestry (₹651cr)

11. Green India Mission

The **National Mission for a Green India (GIM)** is a **Centrally Sponsored Scheme** operating as a **sub-mission** (core mission) under the National Action Plan on Climate Change (NAPCC). It is managed at the union level by the **Ministry of Environment, Forest and Climate Change (MoEFCC)**. Under a Revised GIM Plan (2021–2030) updated to meet Paris Agreement goals, the mission functions as an **umbrella framework** for forest-based climate mitigation and adaptation across India.

Aims and Objectives

- **Expand Green Cover:** Increase forest and tree cover by 5 million hectares (mha).
- **Enhance Forest Quality:** Improve the quality and density of degraded forest lands over another 5 mha.
- **Carbon Sequestration:** Actively contribute to India's updated NDC target by creating a **2.5 to 3.0 billion tonnes equivalent carbon sink** by 2030.
- **Ecosystem Services:** Strengthen biodiversity, protect critical wetlands, and improve hydrological cycles.
- **Livelihood Support:** Enhance forest-based income for 3 million households living in and around forest margins.

Core Features

- **Holistic Greening:** Moves beyond mere tree planting to focus on diverse ecosystems like mangroves, grasslands, wetlands, and urban forestry.
- **Landscape Approach:** Works across contiguous landscapes encompassing both public forest lands and private or marginal agricultural tracts.
- **Convergence Model:** Interlinks with other social and environmental funds, explicitly integrating with MGNREGS (rural employment) and CAMPA (compensatory afforestation).
- **Decentralized Execution:** Adopts a strict "bottom-up" planning model to align priorities with grassroots communities.

Funding Mechanism

GIM utilizes a cost-sharing model between the Union Government and States:

- **Special Category States: 90:10** ratio for North-Eastern states and Himalayan territories.
- **General Category States: 75:25** ratio for all other States and Union Territories.
- **Supplementary Funds:** The baseline budget is supplemented via the **National Fund of CAMPA** and aligned line ministries to support a total estimated 2021–2030 framework cost of ₹12,190 crores.

Implementing Agencies

The framework is deployed across a multi-tier structure to enable local management:

1. **National Level:** MoEFCC alongside the National GIM Mission Directorate.
2. **State Level:** State Forest Development Agencies (SFDA).
3. **District Level:** Forest Development Agencies (FDA).
4. **Local/Village Level:** Joint Forest Management Committees (JFMCs) and **Gram Sabhas**.
5. **Urban Areas:** Ward-level committees and Resident Welfare Associations (RWAs).

Ministry of Environment, Forest and Climate Change +2

Mission Status & Achievements

- **Acreage Expansion:** Over **11.22 million hectares** have been brought under various plantation/eco-restoration frameworks between 2015 and the current period via GIM and convergent state initiatives.
- **State Penetration:** Out of participating regions, states like **Mizoram, Odisha, Punjab, Karnataka, and Sikkim** successfully achieved their baseline localized targets.
- **Policy Extension:** NITI Aayog's Development Monitoring and Evaluation Office (DMEO) validated the structural relevance of the scheme, prompting its continuation and alignment with 2030 climate goals.

Criticisms and Challenges

- **Bureaucratic Control:** Critics argue that implementation relies too heavily on state forest department infrastructure, occasionally bypassing the autonomy of local forest dwellers.
- **Plantation vs. Natural Forest:** Parliamentary panels highlighted that some states prioritized monoculture timber plantations (e.g., eucalyptus) which offer poor biodiversity support and deplete local water tables.
- **Funding Limitations:** Historically, the mission faced significant gaps between allocated budgets and actual fund disbursement, lowering execution rates in financially constrained states.
- **Scientific Inconsistencies:** Environmental researchers point out arbitrary targeting and a lack of regional ecological modeling, which has occasionally resulted in planting inappropriate species in vulnerable biomes

12. National Action Plan on Climate Change (NAPCC)

The **National Action Plan on Climate Change (NAPCC)** is India's multi-ministerial **umbrella scheme** designed to achieve sustainable development while simultaneously addressing climate change adaptation and mitigation.

Nodal Ministry and Implementing Agencies

- **Coordinating Nodal Ministry:** The Ministry of Environment, Forest and Climate Change (MoEFCC) coordinates the overall policy framework.
- **Implementing Agencies:** The NAPCC operates via **nine specialised National Missions**, each assigned to a different line ministry or central department acting as its direct implementing agency.

National Mission	Primary Implementing Agency / Ministry
National Solar Mission	Ministry of New and Renewable Energy (MNRE)
National Mission for Enhanced Energy Efficiency	Ministry of Power (via Bureau of Energy Efficiency)
National Mission on Sustainable Habitat	Ministry of Housing and Urban Affairs (MoHUA)
National Water Mission	Ministry of Jal Shakti
National Mission for Sustaining the Himalayan Ecosystem	Department of Science & Technology (DST)
National Mission for a Green India	Ministry of Environment, Forest and Climate Change (MoEFCC)
National Mission for Sustainable Agriculture	Ministry of Agriculture and Farmers' Welfare
National Mission on Strategic Knowledge for Climate Change	Department of Science & Technology (DST)

National Mission on Human Health *(Added later)* Ministry of Health and Family Welfare

Scheme Nature and Funding Mechanism

- **Nature of Scheme:** The NAPCC is a **hybrid framework**. Because it is an overarching umbrella plan, it does not fit exclusively into one category. It incorporates **Central Sector schemes** (100% funded by the Center, such as R&D missions under DST) alongside **Centrally Sponsored schemes** (cost-sharing between the Center and States, such as the Green India Mission or urban habitat initiatives).
- **Funding Mechanism:** The core funding operates through specific **sectoral budgetary outlays** allocated across the annual budgets of the individual implementing ministries. Resources are heavily scaled up via **convergence with existing flagship welfare schemes** (e.g., funding Sustainable Habitat goals via Smart Cities Mission or AMRUT).

Aims, Objectives, and Core Features

- **Sustainable Growth:** Protecting poor and vulnerable sections through a development strategy sensitive to climate change.
- **Ecological Sustainability:** Advancing economic growth while drastically scaling back the economy's carbon intensity.
- **Co-Benefit Paradigm:** Deploying technologies that offer immediate domestic developmental benefits while fulfilling global climate mitigation goals.
- **Decentralised Strategy:** Requiring individual states to draft **State Action Plans on Climate Change (SAPCCs)** to map regional vulnerabilities.

Key Performance Achievements

- **Renewable Energy Surge:** Driven by the Solar Mission, India's grid-connected solar power capacity crossed **92 GW**, contributing heavily to meeting clean energy commitments.
- **Industrial Energy Savings:** The Perform, Achieve, and Trade (PAT) scheme under the Energy Efficiency mission successfully institutionalized tradable energy-saving certificates across energy-intensive heavy industries.
- **Urban & Water Resource Tracking:** Massive infrastructure upgrades via AMRUT 2.0 and the creation of web-based portals like the Climate Hazard & Vulnerability Atlas of India to build urban local capacity.
- **Afforestation Data:** The Green India Mission continues targeted micro-plantations to scale carbon sequestration to meet NDC climate pledges.

Critical Challenges and Criticisms

- **Inter-Ministerial Silos:** Because nine missions are distributed across ten different government ministries and departments, implementation suffers from slow inter-departmental coordination.
- **Skewed Resource Allocation:** Critics highlight an excessive structural focus on the National Solar Mission, which leaves vital adaptation segments like water conservation, agriculture, and habitat under-resourced.
- **Severe Adaptation Underfunding:** Financial assessments show a massive mismatch between estimated targets and actual budgets; missions like Green India have historically suffered from investment crunches.
- **No Binding Emission Targets:** The plan outlines broad directional shifts rather than committing to legally binding carbon reduction targets, drawing international accountability criticism.
- **Weak State Integration:** Monitoring remains fragmented, and there is a high degree of variation in how effectively individual states execute their localized SAPCC frameworks

13. Compensatory Afforestation Fund (CAMPA).

The **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)** operates as a **statutory framework** regulated by the **Ministry of Environment, Forest and Climate Change (MoEFCC)**. Formally governed by the **Compensatory Afforestation Fund (CAF) Act, 2016**, CAMPA does not strictly fit standard classifications like a Central Sector or Centrally Sponsored Scheme; instead, it is an independent, non-lapsible **institutional funding mechanism** that aggregates non-tax revenues from industrial project proponents to execute environmental restoration through **State Forest Departments**.

Aims and Objectives

- **Compensate Eco-loss:** Replace lost biodiversity and environmental degradation when forest lands are legally diverted for industrial, infrastructure, or mining projects.
- **Promote Afforestation:** Ensure artificial plantations and assisted natural regeneration across alternate or degraded land parcels.
- **Infrastructure & Protection:** Fund structural tools, boundary protection, and high-tech nurseries for long-term forestry preservation.
- **Wildlife Conservation:** Restore critical wildlife corridors and mitigate escalating human-wildlife conflicts.

Funding Mechanism

- **Source of Capital:** Funds are collected as environmental compensation fees paid by government or private "user agencies" for Net Present Value (NPV), penal afforestation, and catch-area treatment.
- **The 90:10 Rule:**
  - **90%** of collected funds go into the **State Public Account** (State CAF) for localized ground execution.
  - **10%** is deposited into the **Public Account of India** (National CAF) for operational oversight, research, and technical tracking.
- **Non-Lapsable Nature:** Funds carry forward automatically to successive fiscal cycles and accumulate central bank-notified interest.

Key Features & Scheme Classification

- **Classification:** It is **neither a Central Sector nor a Centrally Sponsored Scheme**. It is a statutory, self-sustaining financial framework backed by private/industrial levies, though it works as a financial **umbrella backbone** to plug budget shortfalls for parallel programs like *Nagar Van Yojana* and *Mission MISHTI*.
- **Implementing Agencies:** The **National CAMPA Authority** administers apex policy blueprints, while individual **State CAMPA Authorities** and **State Forest Departments** act as ground-level implementing bodies.
- **Structure:** The Union Environment Minister chairs the National Governing Body, while State Chief Ministers or Chief Secretaries supervise state-level operations.

Key Achievements

- **Unprecedented Outlays:** The National Authority approved State Annual Plans of Operation (APOs) worth **₹8,561.34 crores**.
- **Geospatial & Tech Integration:** Standardized the **Digital APO Portal**, introduced the central **National CAMPA Dashboard**, and partnered with BISAG-N to build localized GIS tools for strict scientific audit.
- **Target Clearances:** High performance in specific provinces, notably led by Uttar Pradesh Forest Department which greened over 32,933 hectares and established specialized biodiversity achievements like the *Jatayu Vulture Conservation Centre*.
- **Convergence Support:** Transferred funds to back the **Aravalli Green Wall Project** (restoring 36,025 hectares) and financed **1,464 high-tech registered nurseries**.

Main Criticisms and Challenges

- **Low Fund Utilization:** Central Empowered Committee (CEC) tracking highlights that despite planting nearly 85% of target limits, only **67.5% of total accumulated monetary reserves** have been put to use due to red tape.
- **Monoculture Over Biodiversity:** Critics emphasize "greenwashing" practices where complex, natural eco-networks are cut down and replaced by standard monoculture tree timber plantations (e.g., Eucalyptus or Teak).

- **Sidelining of Forest Communities:** Gram Sabhas and indigenous tribal populations complain of systemic exclusion, arguing bureaucratic top-down deployment bypasses rights granted under the **Forest Rights Act, 2006**.
- **Land Fragmentation & Financial Misuse:** Finding massive, continuous, unencumbered land plots remains difficult, leading to scattered tree patches vulnerable to local cattle grazing. Severe local audits have periodically called out state authorities—such as in Uttarakhand—for diverting funds toward administrative luxury vehicles or generic office infrastructure instead of actual field afforestation

14. Nagar Van Yojana (NVY): Aims to create 600 urban forests (Nagar Vans) and 400 urban gardens (Nagar Vatikas) by 2024–25 to enhance city green cover.

The **Nagar Van Yojana (NVY)** is a **Central Sector Scheme** fully funded under the **National Compensatory Afforestation Management and Planning Authority (CAMPA)** fund. It is a standalone, dedicated greening initiative functioning as a **flagship scheme** rather than an umbrella policy framework under the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.

Core Institutional Framework

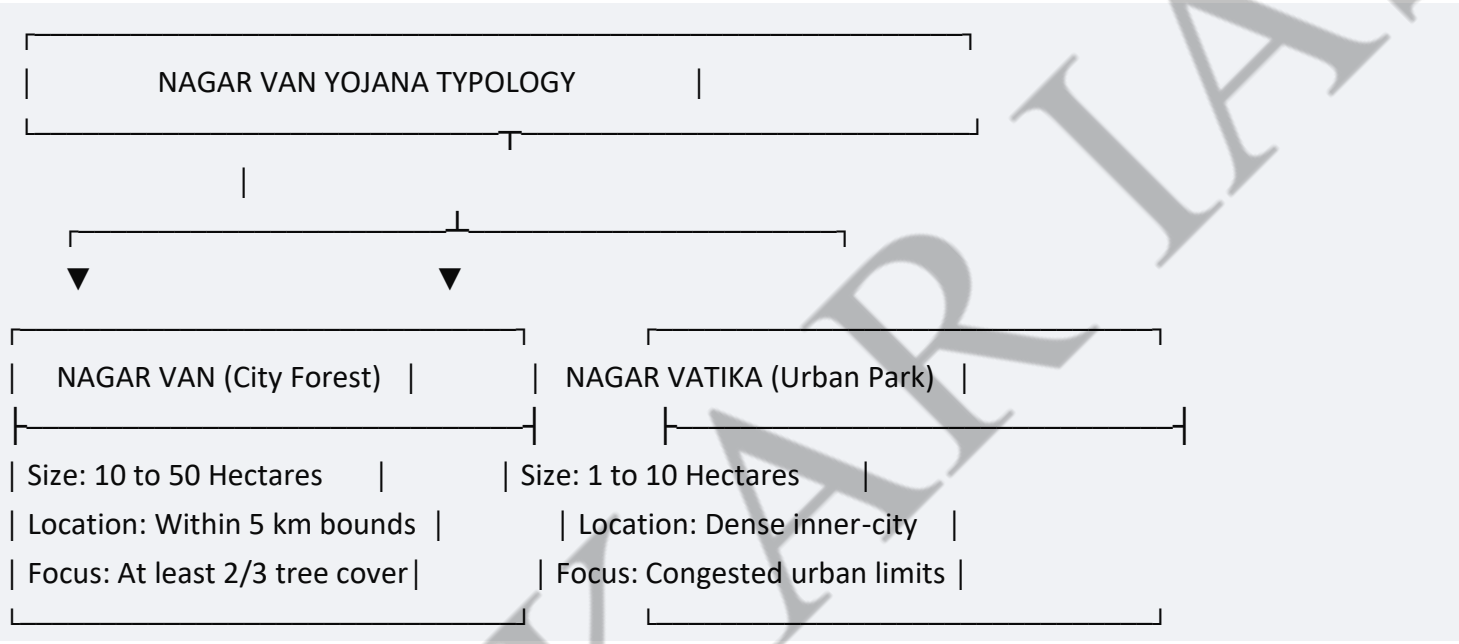
- **Ministry**: Ministry of Environment, Forest and Climate Change (MoEFCC).
- **Implementing Agency**: Executed by the **State/UT Forest Departments** in collaborative execution with **Urban Local Bodies (ULBs)**.
- **Scheme Type**: **Central Sector Scheme** financed 100% by the central government via National CAMPA funds.
- **Funding Mechanism**: Financially backed entirely by the National Compensatory Afforestation Fund (CAMPA). The central ministry grants a **one-time assistance up to ₹2 crore per 50 hectares** directly via State Forest Department interest-bearing accounts.

Aims, Objectives, and Features

Key Aims & Objectives

- **Increase Urban Tree Cover**: Focuses on enhancing tree cover outside traditional forest bounds in cities and peri-urban locations.
- **Ecological Buffers**: Establish urban forests to counter environmental degradation and mitigate localized microclimate heat island effects.

- **In-situ Biodiversity Conservation**: Develop sanctuaries inside urban areas to secure regional flora and local wildlife habitat.
- **Encroachment Protection**: Deliver legal boundaries and security fences to shield vulnerable, degraded city margins from immediate urban encroachment.



Salient Features

- **Two-Tier Typology**: Categorised into large-scale **Nagar Vans** (10 to 50 ha; within 5 km of municipal limits) and small-scale **Nagar Vatikas** (1 to 10 ha; dense inner-city bounds).
- **Density Rule**: Every approved project must permanently allocate **at least two-thirds of its total geographical area** strictly under tree cover.
- **Diverse Component Models**: Allows specialized micro-zones like Biodiversity Parks, Butterfly Conservatories, Herbal Gardens, and *Matri Vans*.
- **Public-Private Participation (PPP)**: Invites active structural partnerships from educational institutions, NGOs, resident welfare associations, and corporate entities.

Achievements and Status (As of 2026)

- **Expanded Project Targets**: The original launch-phase target (400 Nagar Vans and 200 Nagar Vatikas by 2024-25) has scaled to a target of **1,000 Nagar Vans by 2027**.
- **Cumulative Sanctions**: **620 active projects** have been sanctioned across 28 states and 3 UTs.
- **Financial Allocations**: The Press Information Bureau (PIB) logs an cumulative financial layout of **₹654 crore** allocated, with more than **₹566 crore** explicitly approved across 15,625 hectares of urban landscapes.

- **Regional Leaders**: **Andhra Pradesh** holds the highest single approved greening footprint (3,203 ha across 61 projects), tracked by **Madhya Pradesh** (1,983 ha) and **Telangana** (1,690 ha).
- **Synergised Campaigns**: Successfully integrated the recent national *"Ek Ped Maa Ke Naam"* campaign to supercharge urban citizen-driven mass plantations.

Criticisms and Structural Issues

- **Poor Master Plan Integration**: Municipal bodies often isolate these new green spaces from standard urban zoning laws. City master plans rarely feature continuous ecological corridors.
- **Technical Skills Deficit**: Local municipal and city-level enforcement bodies generally lack specific expertise in advanced silviculture and urban microclimate engineering.
- **Exotic vs. Native Imbalances**: Grassroots audits show a frequent over-reliance on fast-growing ornamental or exotic plant species instead of the recommended indigenous biodiversity.
- **High Post-Plantation Mortality**: Planted spaces frequently face high mortality rates due to irregular water supply lines and insufficient post-plantation maintenance after the first year.
- **Land Availability Friction**: Metropolitan regions routinely struggle to secure conflict-free patches of 10 to 50 contiguous hectares within strict urban boundaries.

15. Ek Ped Maa Ke Naam (Plant4Mother):

The **Ek Ped Maa Ke Naam (Plant4Mother)** initiative is a high-profile, nation-wide environmental campaign launched by Prime Minister Narendra Modi on World Environment Day (June 5, 2024). It is structured as a **mass public advocacy and community mobilization campaign** rather than a traditional Central Sector or Centrally Sponsored Scheme. It operates as a cross-cutting, **flagship public movement** under India's broader Mission LiFE (Lifestyle for Environment) framework.

Nodal Ministry & Implementing Agencies

- **Nodal Ministry:** The Ministry of Environment, Forest, and Climate Change (MoEFCC) leads the overarching coordination, strategy, and tracking.
- **Implementing Agencies:** It utilizes a **"Whole of Government" and "Whole of Society"** framework. There is no single implementing agency. Execution is distributed across:
  - **Line Ministries:** Ministry of Education (via 14.7 lakh school Eco Clubs), Ministry of Defence (Armed Forces, NCC), Ministry of Coal, and the National Highways Authority of India (NHAI).

- **Local Bodies:** State Forest Departments, gram panchayats, and municipal corporations.
- **Public Platforms:** Driven digitally via the MyBharat Portal and Meri LiFE app for public logging.

Aims & Objectives

- **Afforestation & Green Cover:** Substantially expand India's carbon sink and forest canopy to combat climate change.
- **Land Restoration:** Reverse land degradation, prevent desertification, and build drought resilience across vulnerable terrains.
- **Emotional Stewardship:** Connect environmental protection with the emotional tribute of honoring one's mother, ensuring higher post-plantation tree survival rates through personal accountability.
- **Promote Indigenous Species:** Emphasize planting local trees (such as Peepal, Neem, and Neem-adjacent native varieties) to preserve biodiversity.

Funding Mechanism

- **No Dedicated Central Budgetary Allocation:** Because it is designed as a campaign rather than a financial scheme, it lacks an independent fiscal budget rule.
- **Convergence Funding:** Plantation drives are financed by pooling money from existing institutional and state programs:
  - CAMPA Funds (Compensatory Afforestation Fund Management and Planning Authority).
  - MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) for rural labor.
  - Corporate Social Responsibility (CSR) allocations from public and private sectors.
  - Institutional budgets belonging to participating departments (e.g., NHAI, Defence, Schools).

Key Features

- **Symbolic Action:** Citizens plant a sapling in honor of their mother and upload a selfie on the government platform to receive an e-certificate.
- **Geo-Tagging & Digital Monitoring:** Utilizes dedicated mobile applications and portals to record data points, tracks survival rates, and maintains transparent accountability.
- **Phase-Based Progression:** Rollout executes in clear seasonal blocks. Phase 1 focused on initial mass targets, while Phase 2.0 targets micro-saturation (e.g., specific school zones and highway networks).

Achievements (Updated as of 2026)

- **140+ Crore Seedlings Planted:** The initial target of 80 crore saplings by September 2024 was surpassed early. Total entries logged across the portal climbed past **140 crore plantations** during the Phase 2.0 cycles spanning 2025–2026.

- **Global Records:** The Territorial Army's 128 Infantry Battalion set a World Book of Records achievement in Jaisalmer by planting over 5 lakh saplings in a single hour.
- **City Milestones:** Indore established an individual milestone by planting more than 11 lakh saplings within a single day.
- **School & Highway Saturation:** Over 10.35 crore saplings were integrated specifically into the national school environment under Phase 2.0. NHAI simultaneously logged over 5.12 lakh trees lining cross-country highway networks.

Criticisms & Ecological Challenges

- **Survival Rate Skepticism:** Environmentalists point out that mass plantation drives often suffer from low post-planting survival rates due to inadequate watering, lack of protection fences, and poor long-term maintenance tracking.
- **Flawed Target Tracking:** Portals rely heavily on user-submitted photos and selfies during the initial planting phase, which measures the act of planting rather than tracking the long-term survival of the mature tree.
- **Land and Resource Diversion:** Critics argue that rapid, competitive attempts to hit local administration numeric targets can trigger inappropriate land clearing or result in monoculture block plantations that degrade local ecosystems rather than restoring natural forests

16. National Clean Air Programme (NCAP): Targeted to achieve a **40% reduction** in particulate matter across 131 cities by 2025–26.

The **National Clean Air Programme (NCAP)** is a long-term, time-bound national strategy launched in January 2019 to comprehensively tackle the air pollution crisis across India.

Ministry & Implementing Agency

- **Nodal Ministry:** Ministry of Environment, Forest and Climate Change (MoEFCC).
- **Implementing Agency:** The Central Pollution Control Board (CPCB) coordinates implementation at the national level, while State Pollution Control Boards (SPCBs) and Urban Local Bodies (ULBs) execute regional action plans.

Scheme Type, Classification & Coverage

- **Scheme Type:** It is structured primarily as a **Central Sector Scheme** because it is subsumed under MoEFCC's umbrella "Control of Pollution" scheme. However, its layout depends on a hybrid mechanism that heavily integrates resource convergence from other ministries.
- **Classification:** It functions as a **flagship environmental initiative** rather than a wide-reaching, legal umbrella scheme.
- **Target Areas:** It targets **131 cities** (comprising 130 designated non-attainment cities exceeding National Ambient Air Quality Standards for 5 consecutive years, alongside Million Plus Cities) across 24 States and UTs.

Aims and Objectives

- To prevent, control, and significantly reduce ambient air pollution levels across the country.
- To enhance the national air quality monitoring network and augment public awareness.
- To build institutional capacities to assess air pollution sources and implement localized mitigation measures.

Funding Mechanism

The financial ecosystem relies on an aggressive multi-pronged design:

1. **Fifteenth Finance Commission (XV-FC) Grants:** Allocates the absolute majority (over 80%) via the *Million-Plus Cities Challenge Fund*, providing performance-linked financial incentives based on air quality metrics.
2. **MoEFCC Budgetary Allocation:** Directly finances smaller non-attainment cities through the "Control of Pollution" budget line. In the **Union Budget 2026-27**, funding for "Control of Pollution" schemes surged to **₹1,091 crore** (up from ₹853.90 crore in the previous fiscal cycle).
3. **Scheme Convergence:** Draws peripheral capital from complementary central programs, including Swachh Bharat Mission (Urban), AMRUT, Smart Cities Mission, and FAME-II.

Core Features

- **City-Specific Clean Air Action Plans (CAPs):** Tailored mandates focusing on distinct, local emission drivers like road dust, vehicular exhaust, domestic biomass usage, and industrial clusters.
- **The PRANA Portal:** Utilizes the web platform PRANA (Portal for Regulation of Air-pollution in Non-Attainment Cities) to track real-time physical and financial progress across cities.
- **Technology & Infrastructure Expansion:** Calls for expanding Continuous Ambient Air Quality Monitoring Stations (CAAQMS) alongside mandatory source apportionment studies.

2026 Status Update & Target Shifts

The 2026 Target: NCAP originally aimed to achieve a 20% to 30% reduction in Particulate Matter and

by 2024 against a 2017 baseline. Due to early implementation lags, the target was officially revised to a **40% reduction in levels or meeting the national ambient standard of pushing the hard deadline to the 2025–26 financial year**.

Key Achievements

- **Widespread Reduction Trends:** Official reports indicate that over **103 cities successfully registered declines** in concentrations compared to the baseline year.
- **Top Performers:** Targeted infrastructure shifts allowed major urban centers like Varanasi (76.4% reduction), Moradabad (58%), and Kanpur (51.2%) to drastically curb pollution. Approximately 25 cities achieved or crossed the revised 40% reduction benchmark.
- **Monitoring Scale-up:** India's active monitoring infrastructure expanded significantly to cover 584 cities with approximately **1,600 monitoring stations** (including 565 CAAQMS).

Main Criticisms & Structural Faults

- **Overemphasis on Coarser Particles:** The program primarily ties its financial performance evaluations to **metrics**, largely ignoring the far more lethal, finer **particles** which regularly exceed safe bounds in more than 100 cities.
- **Skewed & Inefficient Spending:** Out of more than ₹13,415 crore authorized across various funding lines, overall fund utilization sits at **just 74%**. Critically, **68% of funds were expended strictly on mechanical road dust management** (sweeping/watering), while core issues like industrial over-emission, domestic fuel transition, and capacity building received less than 3% combined.
- **Blind Policy Execution:** Nearly one-third of the target cities missed deadlines to finalize their **source apportionment studies**, meaning local authorities spent millions without scientific data pinpointing their actual local pollution sources.
- **Omission of Regional Airsheds:** The program treats air pollution as an isolated municipal boundary issue, bypassing **airshed-based management** required to address transboundary pollution (e.g., agricultural stubble burning across Northern India)

17. National Adaptation Fund for Climate Change (NAFCC): Continues to support states in addressing climate vulnerabilities, with a 2024–25 allocation of ₹160 crore.

The **National Adaptation Fund for Climate Change (NAFCC)** is a **Central Sector Scheme** established in **2015-16** to fund concrete climate adaptation projects across vulnerable States and Union Territories in India.

Core Structure and Institutional Framework

- **Nodal Ministry:** Managed and administered by the Ministry of Environment, Forest and Climate Change (MoEFCC).
- **National Implementing Entity (NIE):** The National Bank for Agriculture and Rural Development (NABARD) oversees project execution and fund disbursements.
- **Scheme Type:** It is a **Central Sector Scheme**, meaning it receives **100% central grant funding** from the Government of India rather than sharing costs with states.
- **Classification:** It acts as a dedicated **flagship initiative** for subnational adaptation rather than a broad umbrella administrative scheme.

Aims, Objectives, and Key Features

Aims & Objectives

- **Fund Concrete Adaptation:** Finance specific, localized projects that directly mitigate climate vulnerabilities.
- **Support National/State Goals:** Align grassroots projects with the National Action Plan on Climate Change (NAPCC) and State Action Plans on Climate Change (SAPCCs).
- **Build Capacity:** Strengthen data networks, map vulnerabilities, and train stakeholders on climate risk management.

Funding Mechanism & Project Flow

1. **Project Mode Execution:** Interventions are sanctioned as standalone projects spanning sectors like agriculture, water resources, forestry, tourism, and animal husbandry.
2. **State Steering Approval:** State-level climate committees must screen and approve proposals before forwarding them to NABARD.
3. **Performance-Based Release:** Funds flow from MoEFCC to NABARD, which disperses them to State Executing Entities in performance-linked tranches.

Current Status and Achievements

Government updates confirm that the NAFCC has financed highly diverse, climate-resilient interventions across **27 States and Union Territories**:

- **Ecosystem & Livelihood Resilience:** Promoted integrated eco-farming models like the *Kaipad* coastal wetland farming in Kerala.
- **Habitat Management:** Supported rehabilitation in ecologically fragile zones, such as the Gulf of Mannar in Tamil Nadu.
- **Climate Resilient Agriculture:** Financed dairy interventions in arid zones of Andhra Pradesh alongside water harvesting, hill slope terracing, and direct-seeded rice cultivation in land-locked zones like Mizoram.

- **Infrastructure Renovation:** Revitalized traditional hill streams, check dams, and water harvesting structures in drought-prone pockets like Nuapada, Odisha.

Key Criticisms

Despite its foundational successes, independent analyses and parliamentary data spotlight several challenges:

- **Drastic Funding Reductions:** Financial tracking reveals that central budgetary allocations have steeply declined. Outlays shrank systematically from peak cycles (e.g., ₹115.36 crore in 2017-18 to less than ₹30 crore in subsequent intervals), leaving many approved regional schemes stranded or incomplete.
- **Implementation Bottlenecks:** Execution reports submitted via PIB Releases emphasize prolonged delays at the executing level. Frequent roadblocks include complex land identification, slow civil finalization, and standard design delays.
- **Regional Allocation Imbalances:** High-vulnerability coastal regions experiencing recurring, severe weather (such as West Bengal dealing with regular cyclonic disruptions) have raised concerns over receiving inadequate financial support relative to climate risk profiles.
- **Sustainability & Coordination Gaps:** Analysts note that subnational authorities require sustained technical "handholding". Local institutional capacity remains a barrier, and without continuous funding, completed adaptation projects risk becoming unsustainable over the long term

18. **Eco-mark Scheme:** Rules notified in September 2024 to promote environment-friendly products under the LiFE (Lifestyle for Environment) movement.

The **Eco-mark Scheme** is a voluntary eco-labelling program in India. It was originally launched in 1991 and officially revamped via the new **Ecomark Rules notified on 26 September 2024**. This update aligns the scheme with India's broader **Mission LiFE (Lifestyle for Environment)** initiative.

Aims and Objectives

- **Promote Green Demand:** Encourage consumer choices toward eco-friendly products.
- **Reduce Environmental Impact:** Incentivise manufacturers to lower energy consumption, optimize resource efficiency, and embrace a circular economy.
- **Ensure Label Integrity:** Provide accurate eco-labelling to completely prevent greenwashing and misleading corporate information.
- **Lifecycle Mitigation:** Minimize pollution and resource depletion across a product's entire cycle, including raw material sourcing, production, usage, and eventual disposal.

Ministry and Implementing Agency

- **Nodal Ministry:** Operated under the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.
- **Implementing Agencies:** Jointly managed by the **Central Pollution Control Board (CPCB)** (which evaluates and frames technical environmental criteria) and the **Bureau of Indian Standards (BIS)** (which acts as the formal certifying and licensing authority).

Governance, Scheme Nature, and Funding

- **Scheme Classification:** It functions as a **Central Sector Scheme**. All major policy directives and regulatory framework developments are entirely handled and driven by the Central Government.
- **Strategic Alignment:** It is a key component under the **umbrella initiative of Mission LiFE**.
- **Funding Mechanism:** Operating primarily on a **self-sustaining, fee-based financial model**. Manufacturers pay direct costs to the Bureau of Indian Standards (BIS). These expenses cover application processing, product testing samples, annual license fees, and renewal assessments.

Key Features

- **The "Matka" Logo:** Retains the traditional **earthen pot (Matka)** as its primary visual mark. This symbol chosen for its biodegradable nature and minimal resource impact.
- **Extended Validity:** Under the updated rules, the certification validity has been **increased to three years** (previously valid for only one year). It requires submitting an annual compliance report.
- **Quality + Eco Dual Requirement:** A product must strictly meet baseline functional quality metrics under the BIS Act alongside designated ecological rules to qualify.
- **Broad Product Scope:** Covers multiple consumer and commercial classes. These include cosmetics, electrical goods, soaps/detergents, plastics, and textiles.
- **Market Surveillance:** Grants explicit power to BIS to perform random market inspections, request sample distributions, and immediately revoke certificates if compliance fails.

Scheme Status and Achievements

- **Regulatory Revamp:** The 1991 guidelines were fully replaced by the Ecomark Rules. This created a streamlined regulatory process, supported by global insights from the Partnership for Action on Green Economy (PAGE).
- **Integration with ESG Frameworks:** Successfully integrated into corporate Environmental, Social, and Governance (ESG) sourcing mandates. This allows companies purchasing from Eco-mark certified vendors to improve their corporate sustainability profiles.
- **Database Modernization:** Operationalized automated processing capabilities to build dedicated online knowledge tools. This ensures quicker application tracking and accessible public verification.

Main Criticisms

- **Historical Inertia:** For over three decades, the 1991 version suffered from **abysmal industry adoption**. Very few manufacturers proactively applied due to complicated legacy testing frameworks.
- **Low Consumer Awareness:** The general public remains largely unaware of what the "Matka" logo represents. This lack of recognition results in weak market demand for certified options.
- **Cost Barriers for MSMEs:** High initial testing and regular renewal fees create financial hurdles for small businesses and local manufacturers.
- **Voluntary Nature Loophole:** Because the certification is completely voluntary, industries facing intense price competition often bypass the eco-label altogether to save costs

19. National Water Mission:

The **National Water Mission (NWM)** is operated as a **Central Sector Scheme** funded entirely by the central government, functioning as an **umbrella framework** under India's National Action Plan on Climate Change (NAPCC).

Administrative Governance

- **Ministry:** Implemented under the Ministry of Jal Shakti (Department of Water Resources, River Development and Ganga Rejuvenation).
- **Implementing Agency:** Managed by a dedicated **National Water Mission Secretariat** led by a Mission Director. Technical execution is steered by the Central Water Commission (CWC), Central Ground Water Board (CGWB), and the National Institute of Hydrology (NIH).
- **Funding Mechanism:** Funded **100% through the Central Budget** via the dedicated allocation "Research and Development Programme in Water Sector and Implementation of National Water Mission". It further optimizes its reach by converging funds from localized state-level allocations and the 15th Finance Commission's tied grants for rural water structures.

Core Aims and Objectives

The overarching goal is the **conservation of water, minimization of wastage, and equitable distribution** across states. It mandates five specific targets:

1. **Public Water Database:** Creating a comprehensive, publicly accessible data depository while evaluating climate change impacts on water systems.

2. **Citizen-Led Conservation:** Promoting community-driven rainwater harvesting and preservation models.
3. **Vulnerable Area Mapping:** Focusing resource allocation heavily on over-exploited and water-scarce geographic zones.
4. **Efficiency Increment:** Increasing water-use efficiency across industrial, domestic, and agricultural sectors by **20%**.
5. **Basin-Level Management:** Upgrading systemic mechanisms to execute integrated water resources management frameworks.

Key Features and Active Sub-Campaigns

- **Catch the Rain Campaign:** Operates under the tagline *"Catch the rain, where it falls, when it falls,"* mandating the construction of check dams, rooftop harvesting, and clearing encroachments.
- **Sahi Fasal Initiative:** Incentivizes farmers in arid regions to pivot toward **less water-intensive, economically rewarding, and climate-resilient crops**.
- **Bureau of Water Use Efficiency (BWUE):** Establishes promotional and regulatory protocols to monitor industrial and irrigation water footprints.
- **National Water Awards:** Annual awards honoring states, urban local bodies, and NGOs executing breakthrough models in sustainable conservation.

Major Achievements

- **Aquifer Mapping Success:** The Central Ground Water Board completed the **National Aquifer Mapping Project**, successfully mapping approximately **25 lakh sq. km** of printable area across India to optimize extraction policies.
- **Massive Infrastructure Scaling:** Under the community-driven *Jal Sanchay Jan Bhagidari (JSJB)* sub-initiative, over **35 lakh groundwater recharge structures** have been successfully constructed across critical blocks.
- **Agricultural Optimization:** The *Sahi Fasal* initiative expanded its footprint, conducting specialized field workshops across water-stressed pockets in states like Maharashtra, Karnataka, and Madhya Pradesh to enforce crop diversification.
- **Policy Interventions:** Spearheaded institutional transitions via the All India Secretaries' Conference on Water Vision @ 2047, successfully formalizing data alignment blueprints across State and Central departments.

Criticisms and Persistent Challenges

- **Inter-State Governance Disconnect:** Since water is fundamentally a **State Subject** under the Indian Constitution, the NWM acts as an advisory body. It struggles to legally mandate inter-state basin coordination or resolve river-sharing disputes.

- **Low Irrigation Efficiencies:** Despite demand-side initiatives, large-scale agricultural sectors continue to display a poor water efficiency rate of **30–38%**, driven heavily by unmetered electricity and sub-surface flood irrigation.
- **Financing Gaps for Last-Mile Targets:** While initial baseline metrics climbed fast, regional departments face immense funding constraints to scale technical infrastructure into highly inaccessible terrain.
- **Climate Vulnerability Outpacing Targets:** Erratic monsoon cycles, extreme flash floods, and accelerated Himalayan glacier depletion have routinely outpaced the historical, structural baselines used by the Mission's data models.

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20. National Mission for Sustaining Himalayan Ecosystem:

he **National Mission for Sustaining Himalayan Ecosystem (NMSHE)** is a **Central Sector Scheme** funded entirely by the Central Government. It operates as an area-specific **umbrella mission**, serving as one of the eight foundational pillars under India's National Action Plan on Climate Change (NAPCC).

Nodal Ministry and Implementing Agency

- **Nodal Ministry:** Operated under the **Ministry of Science and Technology**.
- **Coordinating Agency:** The **Department of Science and Technology (DST)** centrally manages the mission through a dedicated Climate Change Programme Division.
- **Ground Executors:** Implementation is divided across **6 specialized thematic Task Forces** hosted at premier national institutes (e.g., Wadia Institute of Himalayan Geology, Wildlife Institute of India, and National Institute of Hydrology).

Aims and Objectives

- **Glacier and Water Security:** Monitor the health of Himalayan glaciers and forecast risks associated with glacial melt and water resource depletion.
- **Biodiversity Conservation:** Map and protect the rich floral and faunal diversity of the fragile mountain ecosystem.
- **Policy and Capacity Building:** Build national analytical capacities to continuously observe ecosystem changes and arm local state governments with data-driven sustainable policies.
- **Community Adaptation:** Protect indigenous livelihoods by evaluating traditional knowledge systems against modern climate hazards.

Features and Funding Mechanism

- **Geographic Scope:** Covers **13 states and Union Territories** in the Indian Himalayan Region (IHR), including Himachal Pradesh, Uttarakhand, Sikkim, and Jammu & Kashmir.
- **Funding Framework:** Funded 100% via the central budget. It does not have an isolated budget line; instead, funds are allocated internally via the DST's Climate Change Programme. A total of **₹111.63 crore** has been sanctioned to support its distinct target programs.
- **Institutional Framework:** Establishes localized State Climate Change Cells (SCCCs) to bridge central scientific research with local administrative execution.

Key Achievements

- **Pan-India Risk Profiling:** Completed comprehensive climate vulnerability and risk mappings at the district level for 698 Indian districts to pinpoint localized flash flood and drought exposures.
- **Localized Strategic Networks:** Actively operationalized and strengthened State Climate Change Cells across all 13 Himalayan states/UTs to assist in rolling out localized State Action Plans.
- **Disaster Prevention Research:** Established a dedicated Centre of Excellence (CoE) at the Indian Institute of Technology, Roorkee to pioneer research on landslip mitigation and disaster risk reduction.
- **Glaciology Upskilling:** Conducted highly specialized bilateral capacity-building courses in glaciology in partnership with the Swiss Agency for Development and Cooperation (SDC).
- **Policy Standardization:** Issued the "Governance for Sustaining Himalayan Ecosystem" (G-SHE) guidelines to standardize regional construction and eco-tourism frameworks.

Critical Observations and Limitations

- **Financial Reductions:** Despite the vast geography of the 13 states, the budget utilization remains relatively modest (₹111.63 crore over multiple cycles), which restricts the scaling up of capital-intensive engineering interventions.
- **Fragmented Action:** Because execution spans across different ministries (Science & Technology for data, MoEFCC for forests, and Jal Shakti for rivers), it occasionally experiences bureaucratic friction and delayed project clearances.
- **Data Siloing:** Independent research assessments note that real-time glacial and meteorological data gathered by task forces are not seamlessly shared with local village-level bodies for prompt early warnings.

21. National Mission for Sustainable Agriculture (NMSA): Promotes climate-resilient farming practices

The **National Mission for Sustainable Agriculture (NMSA)** is a **Centrally Sponsored Scheme** operating under the umbrella framework of **Pradhan Mantri Rashtriya Krishi Vikas Yojana (PM-RKVY)**. Originally operationalized in **2014–15** as one of the eight core missions under the **National Action Plan on Climate Change (NAPCC)**, it focuses on making Indian agriculture climate-resilient, productive, and sustainable.

Core Governance & Structure

- **Nodal Ministry:** Managed entirely by the Ministry of Agriculture and Farmers Welfare.
- **Implementing Agencies:** Executed primarily by State Departments of Agriculture. Technical knowledge partnerships are anchored by the National Rainfed Area Authority (NRAA), Indian Council of Agricultural Research (ICAR), and specialized organizations like the National Centre of Organic Farming (NCOF).
- **Scheme Type:** It is a **Centrally Sponsored Scheme** (not a Central Sector scheme), meaning costs are shared between the central and state governments.
- **Scheme Categorization:** It functions as an **Umbrella Scheme component**. Initially an independent mission, NMSA was integrated into the *Green Revolution – Krishonnati Yojana* in 2018–19, and subsequently restructured under the **PM-RKVY umbrella scheme** from 2022–23 onwards to enhance inter-departmental convergence and administrative efficiency.

Funding Mechanism

- **Cost-Sharing Ratio:** Funding is split between the Centre and States at a **60:40 ratio** for general category states.
- **Special Regions:** The ratio shifts to **90:10** for North Eastern and Himalayan states.
- **Union Territories (UTs):** Funded **100%** directly by the Central Government.

Aims, Objectives, and Key Features

Core Objectives

- **Enhance Productivity:** Drive agricultural yield specifically in rainfed areas (which cover 60% of India's net sown area) via location-specific systems.
- **Resource Conservation:** Advance water-use efficiency, promote strict soil health preservation, and optimize chemical resource management.
- **Livelihood Security:** Mitigate the risks of crop failures from climate volatility by building diversified income models for small farmers.

Key Features & Sub-Components

- **Rainfed Area Development (RAD):** Uses a "watershed plus" landscape approach to implement **Integrated Farming Systems (IFS)**, blending traditional cropping with horticulture, livestock, fisheries, and agro-forestry.

- **Per Drop More Crop (PDMC):** Promotes on-farm micro-irrigation systems (drip and sprinkler technologies) to maximize water utility.
- **Soil Health Management (SHM):** Creates macro/micro-nutrient data records via localized testing facilities to promote balanced fertilizer application.

Recent Status and Performance Metrics (As of 2026)

Cumulative Achievements

- **Integrated Farming:** The Rainfed Area Development (RAD) component has covered over **8.50 lakh hectares**, passing financial and operational benefits directly to more than 14.35 lakh farmers.
- **Micro-Irrigation Expansion:** Through the PDMC component, over **109 lakh hectares** have successfully adopted micro-irrigation installations since 2015.
- **2026–2030 Target:** The government has established a strict rolling target to bring an additional **100 lakh hectares** under micro-irrigation between 2025 and 2030.
- **Soil Mapping Infrastructure:** Since inception, over **25.79 crore Soil Health Cards** have been generated for farmers. In the 2025–26 cycle alone, approximately 97.53 lakh distinct soil samples were successfully collected and processed.

Core Criticisms and Operational Hurdles

- **Skewed Component Adoption:** Critics highlight that funding and execution heavily favor visible infrastructure like micro-irrigation equipment (PDMC), while complex, long-term ecosystem behavioral practices like agroforestry receive lower field traction.
- **Soil Card Execution Gaps:** Despite high physical printouts of Soil Health Cards, ground-level assessments reveal that smallholder farmers struggle to translate card recommendations into practice due to a lack of localized custom-blend fertilizer retail availability.
- **Delayed State Fund Allocation:** Because it is centrally sponsored, administrative delays in state-level matching fund generation frequently stall project implementations during critical early-sowing periods.
- **Data Fragmentation:** Soil and weather monitoring databases on GIS platforms remain localized, hindering real-time, unified climate advisory delivery across distinct agro-climatic zones

22. Project Tiger & Elephant: Central sector components were restructured into the Secretariat budget to streamline funding.

Project Tiger & Elephant is an integrated wildlife conservation initiative, legally formalised through the amalgamation of the standalone Project Tiger (launched 1973) and Project Elephant (launched 1992) programs. Administratively merged into the **Project Tiger and Elephant Division (PT&E)**, this combined program acts as a critical mechanism for landscape-level conservation across India.

Classification & Administrative Framework

- **Ministry:** Managed under the Ministry of Environment, Forest and Climate Change (MoEFCC).
- **Implementing Agencies:** The National Tiger Conservation Authority (NTCA)—a statutory body—oversees tiger operations. State Forest Departments handle ground implementation.
- **Scheme Type:** It operates as a **Centrally Sponsored Scheme (CSS)**. Funds are split between the Centre and States (typically 60:40 for general states; 90:10 for Northeast/Himalayan states).
- **Umbrella Structure:** It falls under the umbrella scheme of **Integrated Development of Wildlife Habitats (IDWH)**.

Aims and Objectives

- **Population Viability:** To protect, maintain, and expand viable wild populations of tigers and Asiatic elephants in their natural ecosystems.
- **Habitat Connectivity:** To secure and restore critical wildlife corridors, preventing habitat fragmentation across intersecting forest ranges.
- **Conflict Mitigation:** To deploy technological and community-driven measures to curb Human-Wildlife Conflict (HWC).
- **Local Livelihoods:** To generate local employment and promote sustainable eco-development initiatives for forest-fringe communities.

Funding Mechanism

- **Consolidated Budget:** Budgets for both initiatives are combined to minimize spatial and administrative overlaps.
- **Resource Allocation:** For the **2025–26 fiscal period**, the Union Budget allocated ₹290 crore specifically to Project Tiger and Elephant, marking an 18% increase from previous revised estimates.
- **External Mobilisation:** Supplemented by the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) for large-scale exercises like Management Effectiveness Evaluations (MEE).

Key Features

- **Core-Buffer Strategy:** Tiger reserves are strictly structured into inviolate 'Core' zones and peripheral 'Buffer' zones.

- **Landscape Approach:** Interventions are planned at a landscape level rather than inside artificial administrative borders.
- **Digital Monitoring:** Utilises the *Gaj Soochna App* for captive elephant DNA profiling alongside automated AI tracking models.
- **Community Integration:** Mandates the engagement of indigenous populations as local primary stakeholders in conservation tasks.

Key Status Updates & Achievements

- **Protected Area Growth:** The protected network features **58 Tiger Reserves** and **33 Elephant Reserves** across India.
- **AITE Sixth Cycle:** The initiation of the sixth cycle of the *All India Tiger Estimation (AITE)* introduced updated field technologies.
- **Corridor Mapping:** A comprehensive database identifies **32 tiger corridors** and **150 elephant corridors** spanning 15 states to prioritize land acquisitions.
- **Enhanced Ex-Gratia:** Relief payouts for human fatalities resulting from wildlife encounters were doubled from ₹5 lakh to **₹10 lakh**.
- **Rail-Track Safeguards:** A dedicated mitigation portal tracks and safeguards **110 critical railway crossing sites** to reduce train collisions.

Criticisms & Structural Challenges

CRITICISMS & CHALLENGES	
Financial Reductions	Combined allocations are lower than historical individual budgets.
Fund Utilization Friction	Delays in state releases cause inconsistent fund utilization.
Local Displacement Concerns	Relocation strategies sometimes impact forest dweller land rights.

| Rising Mortality & Conflict | High conflict rates and natural/human- |
| | caused fatalities persist. |
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- **Diluted Focus & Funding Cuts:** Critics argue that merging the budgets obscures the distinct ecological requirements of both species. Total funding remains lower than the standalone peaks of previous decades (e.g., ₹350 crore for tigers alone in 2018–19).
- **Erratic Fund Disbursal:** Red-tape between central approvals and state-level disbursement causes erratic fund implementation.
- **Community Discontent:** Human-rights groups flag instances where local tribes face displacement from core tiger areas without adequate rehab packages.
- **Persistent Human-Wildlife Friction:** Despite safety measures like solar fences, infrastructure expansion through migratory paths creates high human-elephant conflict rates.

23. Project Cheetah (Expansion Phase): 2025 saw the introduction of cheetahs into the Gandhisagar Wildlife Sanctuary in Madhya Pradesh.

Project Cheetah is an ambitious, world-first intercontinental large wild carnivore translocation initiative launched by India in September 2022 to reintroduce cheetahs after their local extinction in 1952.

Scheme Classification & Governance

- **Administrative Ministry:** Operated under the Ministry of Environment, Forest and Climate Change (MoEFCC).
- **Implementing Agency:** The National Tiger Conservation Authority (NTCA), collaborating with the Wildlife Institute of India (WII) and state forest departments.
- **Scheme Type:** It is structured as a **Centrally Sponsored Scheme** subsumed under the larger umbrella scheme of *Project Tiger and Project Elephant*.
- **Strategic Nature:** It is a **flagship conservation initiative** of the Government of India.

Aims and Objectives

- **Ecosystem Restoration:** Re-establish the functional role of the cheetah to restore degraded, open forests and highly neglected grassland/savanna ecosystems.
- **Population Viability:** Build a self-sustaining, free-ranging metapopulation across historical ranges.

- **Global Conservation:** Expand global cheetah conservation efforts by securing a genetically diverse population outside Africa.
- **Livelihood Generation:** Enhance eco-tourism, create green jobs, and uplift local community economies through the *Jan Bhagidari* (public participation) model.

Funding Mechanism

- **Primary Source:** Financed through the National Compensatory Afforestation Fund Management and Planning Authority (CAMPA).
- **Corporate Backing:** Heavily supplemented via Corporate Social Responsibility (CSR) funds, including public sector undertakings like the Indian Oil Corporation.
- **International Framework Integration:** Supported through diplomatic MoUs for biological trade and conservation diplomacy with African countries.

Current Status & Expansion Phase (2026 Update)

As of **mid-2026**, Project Cheetah has transitioned from a single-site experiment into a structured **multi-site consolidation and expansion phase**:

- **Third Country Partnership:** In February 2026, **Botswana** joined Namibia and South Africa as the third African supplier nation. The Indian Air Force airlifted **9 new cheetahs (6 females, 3 males)** from Botswana to Kuno National Park.
- **Geographical Expansion:** The initiative operationalised its adaptive multi-site management strategy. Authorities began transferring cheetahs from Kuno to the **Gandhi Sagar Wildlife Sanctuary** in Madhya Pradesh to form a linked metapopulation corridor across 17,000 sq km.

Key Achievements

- **Population Milestone:** In March 2026, India's total cheetah population successfully **surpassed the 50-mark milestone**, jumping from 30 animals in late 2025.
- **Successful Second-Generation Breeding:** Breeding success is highly evident, with over 28 cubs born on Indian soil. Crucially, *Mukhi*—the first cheetah cub born in India—gave birth to five cubs, proving **second-generation climate adaptation and viability**.
- **Local Socio-Economic Upliftment:** Established over 450 *Cheetah Mitras* (community guardians), created hundreds of direct local forestry jobs, and boosted land values via surging ecotourism.

Main Criticisms

- **Enclosure Captivity vs. True Rewilding:** International and local conservationists argue that the project relies heavily on keeping cheetahs inside soft-release fenced enclosures (*bomas*), functioning more like intensive safari management rather than authentic wild landscape distribution.
- **Inadequate Long-Term Space:** Critics emphasise that Indian national parks lack the massive, continuous, human-free expanses (700 to 3,000+ sq km) required by wide-ranging African cheetahs.
- **High Initial Mortality Rates:** The project faced intense public scrutiny during its first two years due to adult and cub mortalities resulting from unforeseen adaptation issues, such as fatal maggot infestations under winter coats.
- **Resource and Legal Diversion:** Critics point out that massive funding is funnelled into a single exotic species, which legally conflicts with or neglects urgent domestic conservation efforts, such as the pending Supreme Court mandate to relocate native Asiatic Lions

24. National Red List Roadmap 2025–2030: Unveiled to protect 11,000 endangered

India's **National Red List Roadmap and Vision 2025–2030** is a comprehensive, science-based strategic framework launched at the IUCN World Conservation Congress in Abu Dhabi. It transitions India's conservation policy from a fragmented model to a unified, data-driven national biodiversity regime.

Administrative Structure & Classification

- **Ministry:** Governed directly under the Ministry of Environment, Forest and Climate Change (MoEFCC).
- **Implementing Agencies:** Jointly spearheaded by the **Zoological Survey of India (ZSI)** and the **Botanical Survey of India (BSI)**. They work in collaboration with IUCN-India and the Centre for Species Survival (CSS), India. The Wildlife Institute of India (WII) provides auxiliary scientific support.
- **Scheme Type:** It operates as a **Central Sector Scheme** framework. It relies on 100% funding from the Central Government via regular budgetary allocations to the MoEFCC, BSI, and ZSI. It does not demand a state-matching share.
- **Umbrella vs. Flagship Status:** It serves as a **Flagship scientific initiative** within the country's overarching biodiversity conservation strategy. It is designed specifically to meet Target 4 of the Kunming-Montreal Global Biodiversity Framework (KM-GBF) and India's obligations under the Convention on Biological Diversity (CBD).

Aims, Objectives, and Funding

- **Core Aim:** To systematically identify, classify, and protect India's most vulnerable species by building a nationally coordinated threat-assessment system.
- **Primary Objectives:**
  - Evaluate the extinction risk of approximately **11,000 priority species** (7,000 flora and 4,000 fauna).
  - Publish authoritative national **Red Data Books** for both Indian flora and fauna by 2030.

- Establish a centralized, accessible digital database for evidence-based policymaking.
- **Funding Mechanism:** Financed natively through MoEFCC's central environmental funds. It is supplemented by technical resource pooling, institutional grants, and international scientific partnerships with the IUCN.

Key Features

- **Multi-Taxa Coverage:** Simultaneously evaluates terrestrial, marine, and avian biodiversity across diverse biogeographic zones.
- **Global Standard Alignment:** Employs the globally accepted, rigorous scientific methodologies of the IUCN Red List.
- **Inclusive Integration:** Blends formal taxonomy with traditional ecological knowledge and citizen science from indigenous communities.
- **Proactive Conservation Mapping:** Integrates dynamic GIS mapping tools to monitor species distribution limits.

Status and Achievements (As of 2026)

- **Institutional Coordination:** The network connecting premier academic, state-level forest bodies, and national labs has been successfully structured.
- **Target Progress:** Multi-disciplinary expert groups have actively begun categorising high-priority endemic species in the Himalayas, Western Ghats, Indo-Burma, and Sundaland.
- **Digital Infrastructure:** Creation of the centralized data architecture required to aggregate historically fragmented biodiversity data is underway.

Criticisms and Implementation Challenges

- **Taxonomic Data Deficits:** Many cryptic, non-charismatic species and those in remote ecological zones suffer from acute data deficiency. Critics worry this could skew priorities toward prominent mammals and birds.
- **Inter-Departmental Friction:** Translating data into immediate enforcement requires seamless coordination between central bodies and state forest departments, which remains complex.
- **Policy Contradictions:** Environmentalists point out a gap between data collection and execution. Critical habitats mapped by the initiative often intersect with heavily pushed national infrastructure and mining projects.
- **Capacity Constraints:** There is a notable shortage of trained field taxonomists capable of delivering fast, high-fidelity assessments within the five-year deadline

25. Amended Forest Conservation Guidelines (2026):

The **Amended Forest Conservation Guidelines (2026)** were notified on **January 2, 2026**, by the Central Government to re-engineer how plantation and afforestation activities are governed on India's degraded forest tracts.

The guidelines amend the regulatory framework of the **Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980** (formerly the Forest Conservation Act).

Core Administrative Structure

- **Nodal Ministry:** Ministry of Environment, Forest and Climate Change (MoEFCC).
- **Implementing Agencies: State Forest Departments** act as the primary on-ground execution and regulatory bodies.
- **Scheme Classification:** These are statutory regulatory **guidelines** governing a legislative Act, rather than a standalone fiscal Central Sector or Centrally Sponsored Scheme. However, they functionally integrate with and leverage the financing structure of **Centrally Sponsored Umbrella Schemes** (like the National Mission for a Green India) and statutory pools like CAMPA.

Aims and Objectives

- **Targeting Degraded Forests:** To ecologically restore approximately **2.08 lakh sq. km** of India's open and scrub forest areas.
- **Achieving Green Goals:** To fast-track the national target of maintaining **33% total forest and tree cover**.
- **Resource Mobilisation:** To bridge fiscal shortfalls by inviting a **whole-of-society approach** using non-government funding.
- **Economic Substitution:** To increase domestic timber and pulpwood production, reducing import dependence on paper and timber products.

Key Features of the 2026 Guidelines

- **Reclassification as "Forestry Activities":** Afforestation and restoration works on forest lands by private or non-government entities are now classified as **purely forestry activities** (instead of non-forest use).
- **Financial Exemptions:** Because these activities are no longer labelled as forest "diversions," projects are **exempted from paying Net Present Value (NPV)** and are cleared of Compensatory Afforestation (CA) financial obligations.
- **Public-Private Collaboration:** State governments can formally engage **non-government entities and private corporations** to execute restoration works on degraded lands.
- **Strict Plan-Centric Supervision:** All outsourced restoration must strictly comply with the pre-approved **Working Plans or Management Plans** of the respective State Forest Departments.

- **Government Land Retention:** Land ownership, control, and absolute oversight **remain strictly with the government**; no privatization of forest land ownership is permitted.
- **Revenue-Sharing Flexibility:** States are given the discretion to draft custom, case-specific **revenue-sharing and resource utilisation mechanisms** with partner entities.
- **Multi-Layer Oversight:** For large-scale infrastructure operations, an amendment under the rules mandates that any forest land proposal exceeding 40 hectares requires simultaneous **field inspections by senior circle officers** (e.g., Conservator of Forests) alongside the local DFO.

Funding Mechanism

Funding does not rely entirely on the Union budget. Instead, it employs a blended model:

1. **Private/NGO Capital Investment:** Non-government entities bring corporate funding to carry out the restoration in exchange for agreed state-level resource benefits.
2. **CAMPA Funds:** Utilises additional funding deposited under penal compensatory afforestation heads managed by the **National and State** CAMPA authorities.

Current Status & Achievements (As of 2026)

- **Policy Notification:** Successfully rolled out via central circulars to all Additional Chief Secretaries and Principal Secretaries of Forests across States/UTs to begin regional implementation frameworks.
- **Administrative Fast-Tracking:** Streamlined clearance procedures for strategic infrastructure and mineral development by reducing the standard regulatory processing window from **160 days to 130 days**.
- **Extended Implementation Windows:** Allowed project proponents a extended **5-year compliance window** (up from 2 years) to securely arrange funds and complete Stage-I clearance parameters.

Key Criticisms

- **Monoculture Risks:** Environmentalists warn that allowing private commercial entities into degraded zones might lead to the mass planting of commercial timber varieties (e.g., eucalyptus, bamboo), replacing biodiverse native ecosystems with **monoculture plantations**.
- **Dilution of Environmental Costing:** Removing mandatory NPV payments and CA liabilities is heavily criticized for **weakening ecological safeguards** and stripping away structural financial penalties for environmental alteration.
- **Marginalisation of Forest Communities:** Tribal rights advocates point out that massive plantation drives managed by corporate partnerships could restrict community access to forests, potentially disrupting land rights established under the **Forest Rights Act (FRA), 2006**.
- **Regulatory Discretion:** Critics argue that leaving resource utilisation and revenue-sharing mechanisms entirely to the flexible discretion of state executives creates **regulatory ambiguity** and risks corporate exploitation

27. Amrit Dharohar (Wetland Conservation): India expanded its network to **98 Ramsar sites** by January 2026. In early 2026, Udaipur and Indore became India's first Ramsar-accredited Wetland Cities.

The **Amrit Dharohar Scheme** is a targeted initiative launched by the Government of India on June 5, 2023 (World Environment Day) to protect and sustainably manage the country's wetland ecosystems. It explicitly focuses on the conservation and "wise use" of **Ramsar Sites** across India.

Ministry and Implementing Agency

- **Nodal Ministry:** Ministry of Environment, Forest and Climate Change (MoEF&CC).
- **Collaborating Ministry:** Ministry of Tourism (MoT) (specifically for the nature tourism and alternative livelihood sub-components).
- **Implementing Agencies:** The scheme operates via **convergence**. It is executed jointly by Central Ministries, **State Wetland Authorities**, local Panchayats, and formal/informal community networks. Technical support is provided by the Knowledge Partners of the Wetlands Division under the MoEF&CC.

Scheme Classification & Funding Mechanism

- **Scheme Type:** It functions under the **Centrally Sponsored Scheme (CSS)** framework. It operates in alignment with the overarching National Plan for Conservation of Aquatic Ecosystems (NPCA).
- **Flagship vs. Umbrella:** It is a **flagship campaign/initiative** executed under India's broader "Green Growth" budget priority and Mission LiFE framework.
- **Funding Ratio:** Funds are distributed through the NPCA on a cost-sharing basis:
  - **100% Central Share** for Union Territories.
  - **90:10** ratio for North-Eastern and Himalayan States.
  - **60:40** ratio for all other States.

Aims, Objectives, and Core Features

- **Aims:** To safeguard aquatic biodiversity, maximize the ecological character of Ramsar sites, and transition fragile ecosystems from mass tourism to sustainable, community-led nature tourism.
- **Four Pillars/Features:**

1. *Species and Habitat Conservation:* Restoring local flora, fauna, and water bird habitats.
2. *Nature Tourism:* Shifting to high-value, low-volume eco-tourism.
3. *Wetlands Livelihoods:* Generating sustainable commercial avenues for local populations.
4. *Wetlands Carbon Assessment:* Quantifying and maintaining carbon sinks to mitigate climate change.

Status and Achievements (As of 2026)

The scheme was designed with a initial **three-year implementation timeline** (June 2023 to June 2026).

- **Expansion of Sites:** Since its launch focusing on 75 initial locations, India has successfully expanded its footprint to **85 Ramsar sites**.
- **Capacity Building & Certifications:** Under the Alternative Livelihood Programme (ALP), hundreds of local community members have successfully graduated from training programs at pilot sites. Programs like the *Paryatan Navik Certificate* (PNC) have formalised and certified local boatmen as eco-tourism nature guides.
- **Pilot Completions:** The first intensive phases concluded successfully across key pilot zones, including **Chilika Lake (Odisha), Sultanpur National Park (Haryana), Bhitarkanika Mangroves (Odisha), Sirpur (Madhya Pradesh), and Yashwant Sagar (Madhya Pradesh)**.
- **Educational Outreach:** Partnered with CIET-NCERT to produce student-targeted environmental curriculums and films to institutionalize wetland conservation values.

Criticisms and Bottlenecks

- **Exclusive Focus on Ramsar Sites:** Experts criticize the scheme for concentrating resources exclusively on internationally recognized Ramsar sites, leaving thousands of small, non-designated urban and rural wetlands exposed to rapid degradation and illegal construction.
- **Enforcement Lacunae:** Critics point out that while capacity building is progressing, actual on-ground enforcement of wetland conservation laws against industrial discharge and encroachment remains weak.
- **State-Level Implementation Lags:** Because it relies on a 60:40 funding model for most states, poorer states have occasionally delayed setting up dedicated State Wetland Authorities or matching grants, causing uneven progress across different geographical zones

28. National Green Hydrogen Mission: A budget of ₹200 crore was allocated until **2025–26** specifically for funding green hydrogen testing facilities and infrastructure.

The **National Green Hydrogen Mission (NGHM)** is a **flagship, umbrella Central Sector Scheme** designed to make India a global hub for the production, utilization, and export of Green Hydrogen and its derivatives.

Administrative Framework

- **Nodal Ministry**: Ministry of New and Renewable Energy (MNRE).
- **Implementing & Central Nodal Agency**: Solar Energy Corporation of India Limited (SECI).
- **Scheme Nature**: **Central Sector Scheme** (100% funded by the Union Government). It operates as an **umbrella framework** hosting several sub-schemes and sectoral guidelines.

Aims, Objectives, and Key Targets (By 2030)

- **Production Scale**: Achieve a green hydrogen production capacity of at least **5 Million Metric Tonnes (MMT) per annum**.
- **Energy Capacity**: Add approximately **125 GW of associated renewable energy capacity**.
- **Economic Impact**: Attract over **₹8 lakh crore in total investments** and create over **6,00,000 green jobs**.
- **Strategic Autonomy**: Reduce fossil fuel imports by over **₹1 lakh crore**.
- **Climate Target**: Abate nearly **50 MMT of annual greenhouse gas emissions**.

Funding Mechanism

The mission was launched with an overall initial outlay of **₹19,744 crore** up to FY 2029-30. The Union Budget 2026 maintained a yearly allocation of **₹600 crore for FY 2026–27** to finance ongoing infrastructure and pilot rollouts. The funds are broadly distributed across four verticals:

1. **SIGHT Programme (₹17,490 crore)**: Financial incentives for domestic electrolyser manufacturing and green hydrogen production.
2. **Pilot Projects (₹1,466 crore)**: Testing technologies in steel, shipping, and heavy mobility.
3. **Green Hydrogen Hubs (₹400 crore)**: Developing regional clusters for large-scale production.
4. **R&D and Innovation (₹388 crore)**: Funding public-private research partnerships.

Key Features

- **SIGHT Incentives**: Direct financial payouts to lower the initial capital burden of setting up manufacturing plants and domestic supply units.
- **Waiver of Transmission Charges**: Inter-State Transmission System (ISTS) charges are completely waived for green hydrogen projects commissioned until December 2030.
- **Regulatory Sandbox & Certification**: Setting a rigid carbon intensity threshold **2 kg CO_2e per kg of H_2**) to strictly qualify as "green".
- **Demand Bundling**: Aggregating demand across sectors like fertilizers and oil refineries to discover low, globally competitive baseline prices.

Recent Achievements (Updated as of 2026)

- **Capacity Commissioning**: Around **8,000 tonnes per annum (TPA)** of green hydrogen production capacity has been physically commissioned.
- **Tender Allocations**: Under the SIGHT programme, **3,000 MW per annum** of electrolyser manufacturing capacity and **8,62,000 tonnes per annum** of production capacity have been officially awarded to companies.

- **Demand Certainty & Purchase Agreements**: The government finalized the exchange of **Green Ammonia Purchase Agreements (GAPA)** for 670,000 tonnes per annum. This 10-year demand certainty is expected to save $2.5 billion in foreign exchange.
- **Framework Launch**: The **Green Hydrogen Certification Scheme of India** and official standards for Green Ammonia and Green Methanol were established. 122 international and domestic safety standards were adopted via BIS and PESO.
- **Pilot Logistics**: Landmark pilots were launched, including the world's highest-altitude hydrogen mobility project in Leh and green methanol bunkering facilities at the V.O. Chidambaranar Port. Kandla, Paradip, and Tuticorin have been formalised as dedicated **Green Hydrogen Hubs**.

Criticisms and Structural Challenges

- **High Production Cost**: Despite competitive bidding discovering prices around ₹387–₹397 per kg, green hydrogen remains significantly more expensive than grey hydrogen (produced via fossil fuels). Renewable energy and electrolysers still comprise up to 70% of production costs.
- **Slow Capacity Onboarding**: Out of the targeted 5 MMT by 2030, only 8,000 TPA has been fully commissioned. Analysts warn that bureaucratic delays in executing financial incentives may shift the 5 MMT target out to **2032**.
- **Water Intensity Concerns**: The production requires roughly 9 kg of demineralized water per kg of hydrogen. Critics flag potential resource strain in India's water-stressed regions unless desalination infrastructure is mandate-funded.
- **Infrastructure Gaps**: Storage, high-pressure pipeline transit, and dedicated green shipping corridors require massive capital that goes beyond the current public outlays. This heavily relies on private sector risk-taking

29. PM E-DRIVE:

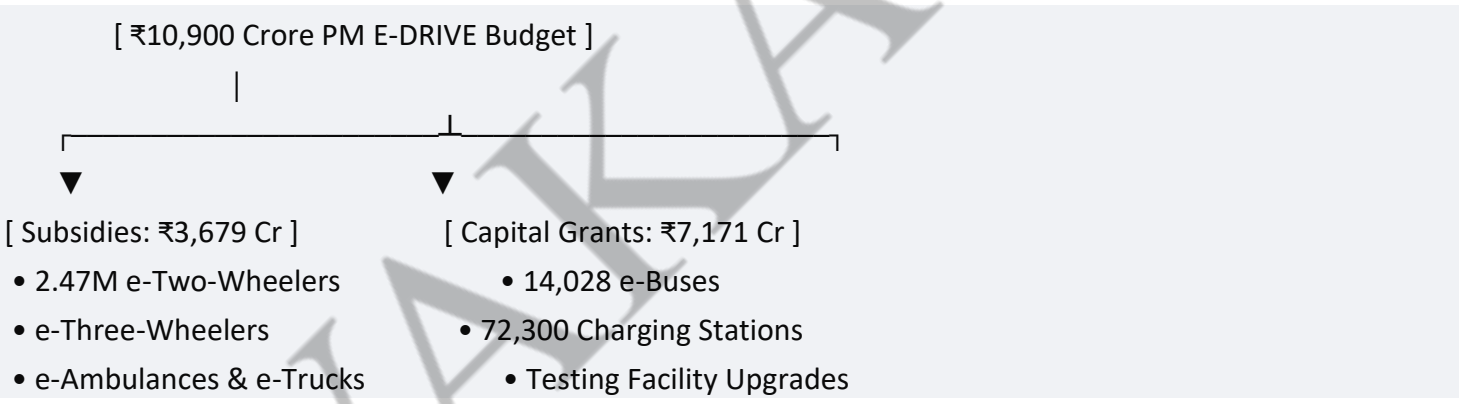
The **PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE)** is a **flagship Central Sector Scheme** designed to accelerate the adoption of electric vehicles (EVs) across India. Officially launched by the **Ministry of Heavy Industries (MHI)** on October 1, 2024, the scheme replaced the previous FAME-II program. The financial framework, core design elements, achievements, and structural challenges are detailed below.

Administrative & Financial Framework

- **Ministry**: Ministry of Heavy Industries (MHI).

- **Implementing & Monitoring Agency**: Governed by the **Project Implementation and Sanctioning Committee (PISC)**, an inter-ministerial empowered committee headed by the Secretary of Heavy Industries. Operational execution is managed via an designated **Project Management Agency (PMA)**.
- **Scheme Nature**: **Central Sector Scheme** (100% funded directly by the Central Government).
- **Classification**: A standalone **flagship scheme** explicitly targeted at EV push, building continuously upon the legacy of FAME-I, FAME-II, and the EMPS-2024 programs.
- **Funding Mechanism**: Operates with a total budgetary outlay of **₹10,900 crore**. Financial allocations are split into two core mechanisms:
  - *Demand Incentives (₹3,679 crore)*: Direct upfront subsidies provided to buyers via digital, Aadhaar-authenticated e-vouchers. The government reimburses this incentive directly to Original Equipment Manufacturers (OEMs).
  - *Grants for Capital Assets (₹7,171 crore)*: Direct grants administered to Public Transport Authorities, state agencies, and vendors for infrastructure deployment.

Aims, Objectives, and Key Features



Aims & Objectives

- **Accelerate Mass Adoption**: Drastically reduce the upfront procurement cost of electric mass-mobility options.
- **Address Range Anxiety**: Rapidly build out public EV charging station grids.
- **Enhance Localization**: Foster a resilient domestic EV manufacturing value chain via strict Phased Manufacturing Programmes (PMP).
- **Decarbonize Freight & Public Services**: Target heavy-emission sectors by promoting electric public transport and heavy duty trucks.

Key Features

- **Aadhaar-Linked E-Vouchers**: Buyers generate an encrypted e-voucher during purchase to instantly access upfront subsidies, removing multi-layered dealer reimbursement delays.

- **Advanced Battery Mandate**: Subsidies are rigidly restricted to vehicles operating on advanced chemistry batteries meeting strict safety guidelines under Central Motor Vehicle Rules (CMVR).
- **Specific Subsidies Tiers**: Subsidy rates are design-capped at ₹5,000/kWh for early-phase deployments and scale down over time to ensure market maturity.
- **Targeted Segments**: Incentivizes electric two-wheelers (e-2W), electric three-wheelers (e-3W), e-ambulances, e-trucks, and e-buses. Private or corporate passenger electric cars (e-4W) are excluded.

2026 Status & Strategic Achievements

The scheme's duration has been updated to sustain deployment continuity. The primary timeline spans until **March 31, 2026**, with select extended milestone windows extending further for heavy vehicle tranches.

- **Surging 2W and 3W Volumes**: Under the immediate umbrella of EMPS and PM E-DRIVE, registered sales of certified e-2Ws alone comfortably surpassed **571,411 units**, with the scheme moving aggressively toward its lifetime target of 24.79 lakh e-2Ws.
- **Financial Disbursements**: Over **₹1,703 crore** has been successfully cleared and disbursed directly to registered EV OEMs as verified reimbursement for upfront consumer demand incentives.
- **e-Bus Deployment Scale**: Out of the targeted 14,028 e-buses funded through the Gross Cost Contract (GCC) model, **13,800 e-buses** have been officially allocated across major high-population urban centers. Convergence Energy Services Limited (CESL) concluded tenders for 10,900 buses under Phase-I, and the remaining 2,900 e-bus bids were actively floated.
- **Infrastructure Expansion**: Under the ₹2,000 crore dedicated infrastructure segment, formal operational guidelines have rolled out to set up **72,300 public EV charging stations** nationwide across highly saturated metropolitan areas and major highways.
- **Testing Infrastructure Upgrades**: **₹780 crore** was successfully injected as structural grants to modernise and scale up national vehicle testing agencies to safely validate next-gen EV parameters.

Key Criticisms & Policy Vulnerabilities

- **Exclusion of Personal Electric Cars**: The complete exclusion of electric cars (e-4W) and hybrid vehicles draws sharp critique from personal mobility sectors.
- **Exclusion of N1 Light Commercial Vehicles**: Omitting the N1 category—which governs light commercial cargo vehicles—is flagged as a major policy gap that slows down green transition in urban last-mile delivery and e-commerce supply lines.
- **Impractical Freight Scrappage Hurdles**: The mandatory clause requiring a valid vehicle scrappage certificate to claim e-truck incentives has largely stalled adoption because India's commercial vehicle scrapping ecosystem is structurally underdeveloped.

- **Digital Divide in E-Vouchers**: Relying completely on Aadhaar-authenticated smartphone e-vouchers creates administrative entry barriers for smaller commercial operator groups and semi-urban or rural buyers.
- **Supply Chain & Grid Concerns**: Heavy reliance on imported lithium and rare-earth critical minerals limits the immediate efficiency of domestic Phased Manufacturing Programs. Experts also note that unmanaged mass charging risks destabilizing local power grids that still heavily lean on fossil-fuel power sources