

Atmanirbhar Timber Economy

**How Agroforestry Reforms are Transforming Farmer
Incomes and Forest Governance**

Executive Summary

India's agricultural economy stands at a crossroads. Despite concerted efforts to raise productivity, farmer incomes remain stagnant, vulnerable to climate shocks, price fluctuations, and fragmented market access. Among the most promising, yet underleveraged, solutions to this crisis is **agroforestry** — the integration of tree crops into agricultural landscapes. Agroforestry has the potential to diversify income streams, enhance ecological resilience, and reduce India's unsustainable dependence on imported timber.

However, the current ecosystem around agroforestry is not designed to deliver on this promise. Regulatory complexity, weak traceability infrastructure, and limited access to certified markets have constrained farmer participation. As a result, despite being native to India, high-value timber species like teak and gurjan are cultivated abroad, while India racks up an annual import bill exceeding ₹22,000 crore.



In response, the Ministry of Environment, Forest and Climate Change (MoEFCC), in collaboration with GDi Partners and stakeholders across government and industry, undertook a far-reaching reform initiative to unlock agroforestry as a driver of rural income and resilience. This strategy was anchored in a **value chain approach**: spanning from inputs and planting to

harvesting, certification, transport, processing, and market linkage. The effort culminated in the creation of

PRAMAAN, India's first national forest certification scheme; the nationwide roll-out of the **National Transit Pass System (NTPS)**; the drafting and issuance of harmonized **Model Rules** to simplify felling on agricultural land; and the design



of a digital traceability backbone, the **National Timber Management System (NTMS)**, now branded as **TRACE**.

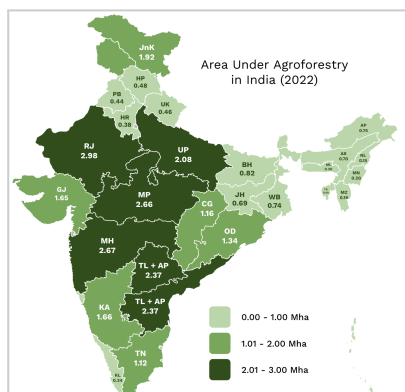
These interventions were not just policy tweaks — they were **systemic transformations**, designed to remove structural bottlenecks and build institutional capacity for a traceable, transparent, and farmer-friendly agroforestry ecosystem. Together, they enable a future where timber production is legal, lucrative, and environmentally sustainable; and where smallholders are empowered as central actors in India's green economy.



The Urgency of Income Security for Indian Farmers

India's agriculture sector provides livelihood support to 42.3% of the population yet contributes a meagre 18.2% in the country's GDP. The disconnect is not just economic, it is structural. Small and marginal farmers, who form the backbone of rural India, operate in a high-risk, low-reward environment. Their incomes are subject to erratic weather, fluctuating market prices, rising input costs, and limited off-farm opportunities. These vulnerabilities are compounded by the growing unpredictability of climate patterns and degrading natural resources.

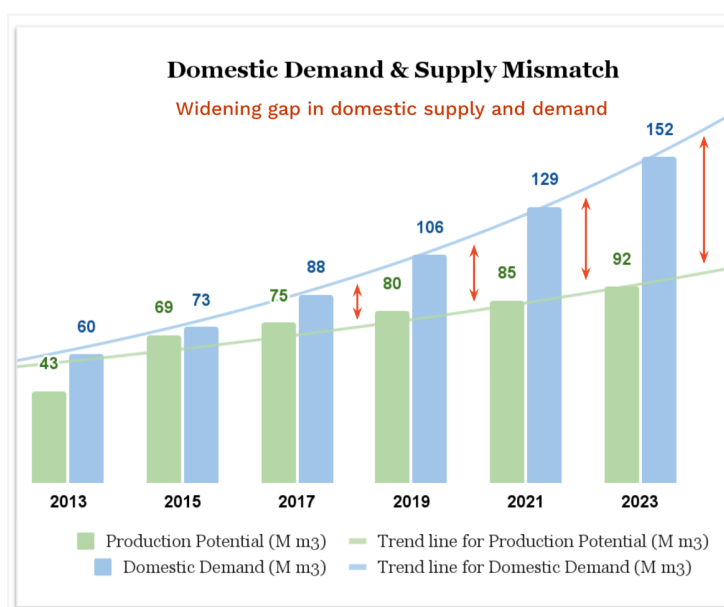
For decades, agricultural policy has focused on raising productivity, but productivity alone does not guarantee prosperity. What farmers need is income stability and diversification: a shift from dependence on a single cropping



season to more resilient, multi-source livelihood systems. This is where **agroforestry emerges as a game-changing intervention**.

By integrating trees into farming systems, agroforestry offers multiple income streams over staggered timelines. Timber trees like teak, rosewood, and gurjan can supplement crop earnings with higher-value returns, often at times when farm incomes are otherwise lean. They also buffer farms against climate risks, improve soil health, and create ecological corridors that sustain biodiversity.

And yet, despite these advantages, agroforestry in India remains underutilized. The reason is not lack of agronomic viability, it is the presence of systemic disincentives. Farmers who wish to plant timber species face a complex, unclear, and risk-laden regulatory regime. Many cannot harvest or sell trees they've grown on their own land without navigating multiple permissions and departments. The felling and transit of trees is seen primarily through a lens of conservation enforcement, rather than economic opportunity.



- **India's timber potential** stands at 91.51 million m³ annually but remains underutilized.
- **Timber demand is surging**, driven by urbanization and a booming construction sector.
- **Supply lags behind demand**, growing at 3-4% annually, while demand rises by nearly 10%, widening the gap.
- **Timber imports are rising**, as domestic production fails to meet growing needs.
- **High-value species** fetch prices 10x higher than eucalyptus, offering a key opportunity to boost supply and reduce import dependence.

At the same time, India faces a growing **timber trade paradox**. We are endowed with native high-value timber species. Yet, due to low domestic production, we import the very same species, often from ecologically sensitive or high-risk geographies, at massive scale. Timber imports crossed ₹22,000 crore in 2023 alone. This is not just an economic loss, it is a missed opportunity for rural India.

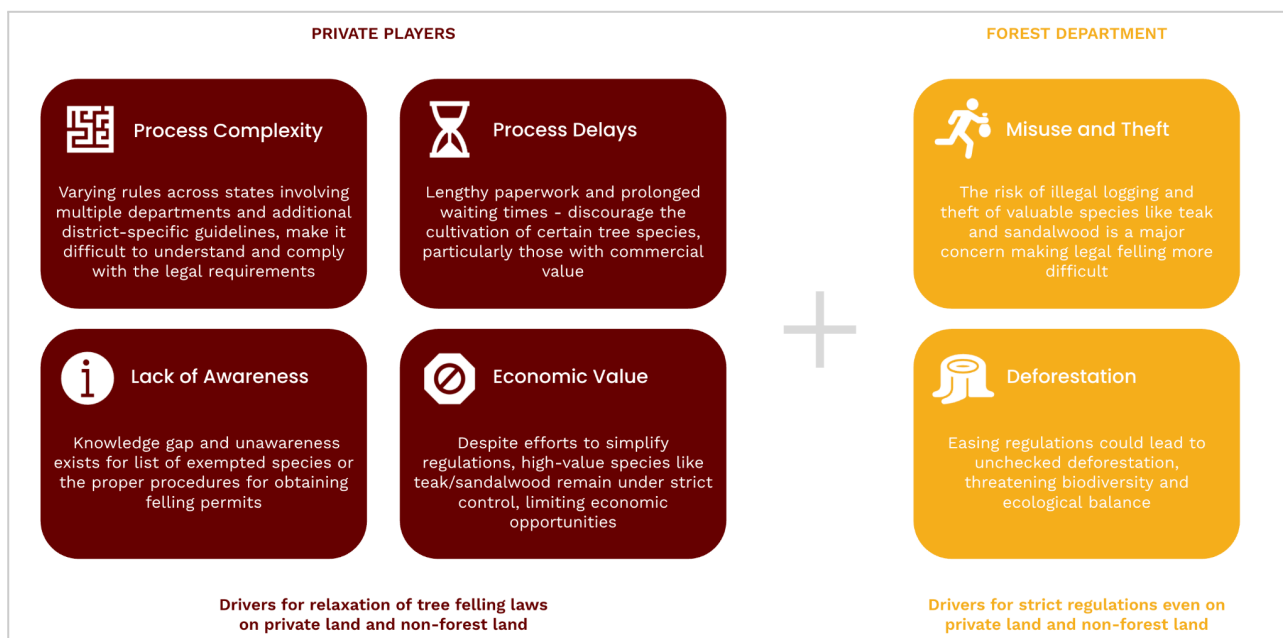
The central question is no longer whether agroforestry is viable, but why, despite its promise, it has not scaled. The answer lies in the need to reimagine the entire ecosystem: making it easier, safer, and more rewarding for farmers to participate. That requires not just policy intent, but structural reform of rules, systems, institutions, and markets.

Agroforestry as a Pathway to Farmer Prosperity

At the heart of India's agricultural transition lies a simple but powerful proposition: **if farmers are enabled to legally grow, harvest, and sell timber through an accessible and transparent system, they will diversify their incomes, reduce climate vulnerability, and participate meaningfully in national and global markets.** This is the foundational hypothesis behind the agroforestry reform effort.

The Problem

Farmers face high climate and market risks. Monoculture cropping systems yield uncertain returns, and income from agriculture is both seasonal and volatile. Meanwhile, India spends over ₹22,000 crore annually on timber imports, despite having the ecological potential to grow high-value species domestically. But agroforestry remains suppressed, not because it is unviable, but because it is unfriendly to navigate.



Complex felling rules, cumbersome permissions, unclear ownership verification, and transit barriers have made timber cultivation unattractive for smallholders.

The Vision

The vision is to **unlock agroforestry as a mainstream economic activity**, one that does not just sit at the periphery of rural livelihoods but becomes central to how income is generated, sustained, and diversified. A scaled agroforestry ecosystem can help **increase and stabilize farmer incomes**, offering returns that are both higher-value and counter-cyclical to crop seasons. It can **reduce India's dependence on imported timber**, positioning the country to meet its own demand with sustainably grown, domestically sourced wood. At the same time, tree-based systems offer a powerful lever for **ecological restoration**, enabling long-term **carbon sequestration**, soil regeneration, and biodiversity recovery. With the right traceability and certification systems in place, Indian timber can also gain a foothold in **global markets**, where verified, ethical sourcing is fast becoming the norm.

The Levers of Change

To make this vision real, four systemic enablers are required:

L1	Deregulate High-Value Timber Species			Shift from Land Ownership to Tree Ownership Proof				Establish Centralized System for Permits		
L2	PLANTATION	FELLING	TRANSIT	PLANTATION	FELLING	TRANSIT	PROCESSING	FELLING	TRANSIT	CERTIFICATION
L3	Standardize and classify high-value native timber species	Simplify felling regulations for deregulated timber species	Improve enforcement at transit checkpoints to prevent unauthorized timber movement	Expand the Plantation Information System (PIS) to include tree ownership verification	Establish legal & tech mechanisms to enable Transfer of Rights (ToR) for tree ownership	Link tree ownership verification with transit	Verify ownership of logs at sawmills and processing units	Integrate felling permits into NTPS with automatic validation	Strengthen NTPS transit pass integration with felling data	Integrate PRAMAAN with NTPS (e-Marketplace)
	Identify and promote short-rotation, high-yield timber species	Strengthen enforcement to prevent illegal logging while supporting legal trade	Enable real-time tracking of timber transit	Enable self-declaration and digital proof of ownership within PIS	Implement technology-based verification for legal tree felling	Establish a real-time tracking mechanism for timber transport	Ensure seamless linkage between mother tree and processed timber	Implement mother tree-to-child log traceability within NTPS	Deploy GPS and AI-powered tracking within NTPS for timber movement	Enhance NTPS traceability for certified timber in markets
	Develop a Plantation Information System for tracking agroforestry plantations	Streamline and digitize felling permit approvals		Integrate compliance and market linkages within the PIS	Develop a linkage mechanism between the mother tree and logs	Strengthen border control & compliance mechanisms	Encourage and drive adoption of PRAMAAN	Automate compliance monitoring and enforcement in NTPS	Strengthen NTPS with analytics and reporting	Streamline NTPS certification processes for verified entities

1. Policy Reform

- Clear, consistent felling and transit rules that respect ownership while protecting against deforestation.
- Harmonized Model Rules that states can adopt without friction.

2. Digital Infrastructure

- A unified, intuitive, end-to-end platform for plantation registration, felling permissions, transit passes, and certification: enabling traceability and ease of doing business.

3. Certification and Market Access

- A national certification system that meets international credibility standards while being affordable and accessible to Indian farmers.
- Chain of Custody systems that ensure downstream buyers can verify origin and sustainability.

4. Institutional Alignment and Capacity

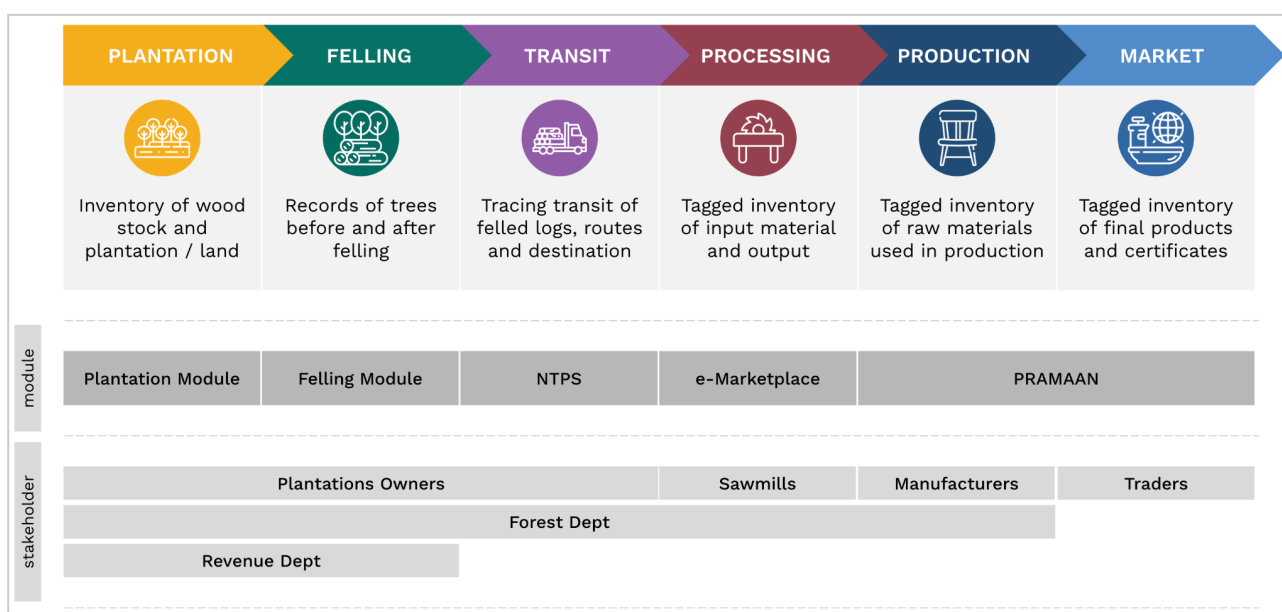
- A governance architecture that coordinates across forestry, agriculture, industry, and finance; reducing duplication and enabling convergence.

The Pathway to Impact

If farmers are provided with simplified, tech-enabled, and transparent mechanisms to grow, harvest, certify, and sell timber; **and if** regulatory agencies are equipped to verify rather than gatekeep; **then** agroforestry will scale, timber self-sufficiency will rise, and smallholders will gain a stable, high-value income source that is resilient to shocks and aligned with ecological restoration goals.

The Agroforestry Value Chain: From Sapling to Market

Unlocking the full potential of agroforestry requires a **shift from isolated interventions to an integrated, end-to-end value chain approach**. Agroforestry is not simply about planting trees, it is about **connecting the farmer's decision to grow a tree with their ability to harvest it, move it, certify it, and sell it at a fair price**. Each node in this chain either enables or disincentivizes participation. Reforming this value chain holistically - rather than through fragmented, ad hoc solutions - is what gives agroforestry its viability as an economic strategy.



The journey starts with **nursery access and plantation decisions**. Farmers must choose the right species based on ecological suitability, market value, and regulatory permissibility. However, a key constraint is the long rotation period typical of high-value timber species. Without credible planting material, guaranteed offtake, or clarity on felling rights, farmers often defer or abandon agroforestry investments. Recognizing this, the reform agenda includes support for the research and deployment of shorter-rotation, disease-resistant clones, ensuring that farmers are not locked into decade-long uncertainty without economic return.

The next node is **felling** - often the most prohibitive. Even when a tree is grown on private agricultural land, cutting it down can require multiple clearances across departments, with unclear timelines and high transaction costs. For high-value species such as teak, rosewood, and gurjan, felling is either tightly restricted or entirely prohibited in many states. This regulatory ambiguity has a chilling effect on timber cultivation; farmers hesitate to invest in species they may never be allowed to monetize. The regulatory treatment of all felling as a potential threat cascading to deforestation has disincentivised tree planting altogether.

If felling is successfully navigated, the next step is **transit** - moving timber from farm to market. Historically, each state has maintained its own rules for transporting forest produce — including species lists, permit formats, and exemption protocols. For farmers and traders, moving timber across district or state lines often results in legal ambiguity, inconsistent enforcement, and a reliance on intermediaries to navigate paperwork. These inefficiencies increase costs, reduce margins, and reinforce informal market channels. The complexity of this process leads many to operate informally, outside legal channels; which in turn reinforces regulatory suspicion and enforcement pressure.

Once timber reaches **aggregation points** - be it auction yards, depots, or processing mills - it enters another zone of uncertainty. Without a national standard for **traceability or certification**, buyers cannot verify the legality or sustainability of wood, which limits its acceptability in higher-value domestic or export markets. Farmers, in turn, are denied access to premium prices because their produce cannot meet compliance expectations.

A further systemic gap is the **absence of demand visibility**. Farmers operate in an information vacuum - they do not know what species are in demand, what volumes are projected, or how industry requirements are evolving. The lack of forecasting tools or production planning mechanisms means that supply decisions are often speculative and unaligned with downstream needs. This leads to oversupply in some areas, shortages in others, and suboptimal price realization across the board.

Finally, at the **market access stage**, farmers remain disconnected from end buyers. Timber sales are typically routed through informal networks or auction-based systems that offer little price transparency. Without a structured marketplace or certification-backed value differentiation, farmers receive minimal reward for legal, sustainable production - which disincentivizes long-term participation. Additionally, Indian timber faces significant barriers to competing globally. Major importers require **Chain of Custody (CoC)** certification and legality assurance under due diligence laws. Without a credible, nationally governed system to certify and trace timber across its lifecycle, Indian wood remains locked out of formal international value chains - despite meeting the ecological profile.

In short, the current agroforestry value chain is fragmented, opaque, and **risky for the very actors it seeks to empower. High entry barriers, unclear regulatory norms, lack of traceability, poor demand visibility, and weak market linkages** converge to make tree farming a niche or defensive activity, rather than a mainstream income strategy.

Thus, each link in the chain — from **sapling to sale** — needs to function not only in isolation but in concert. Reform must ensure that:

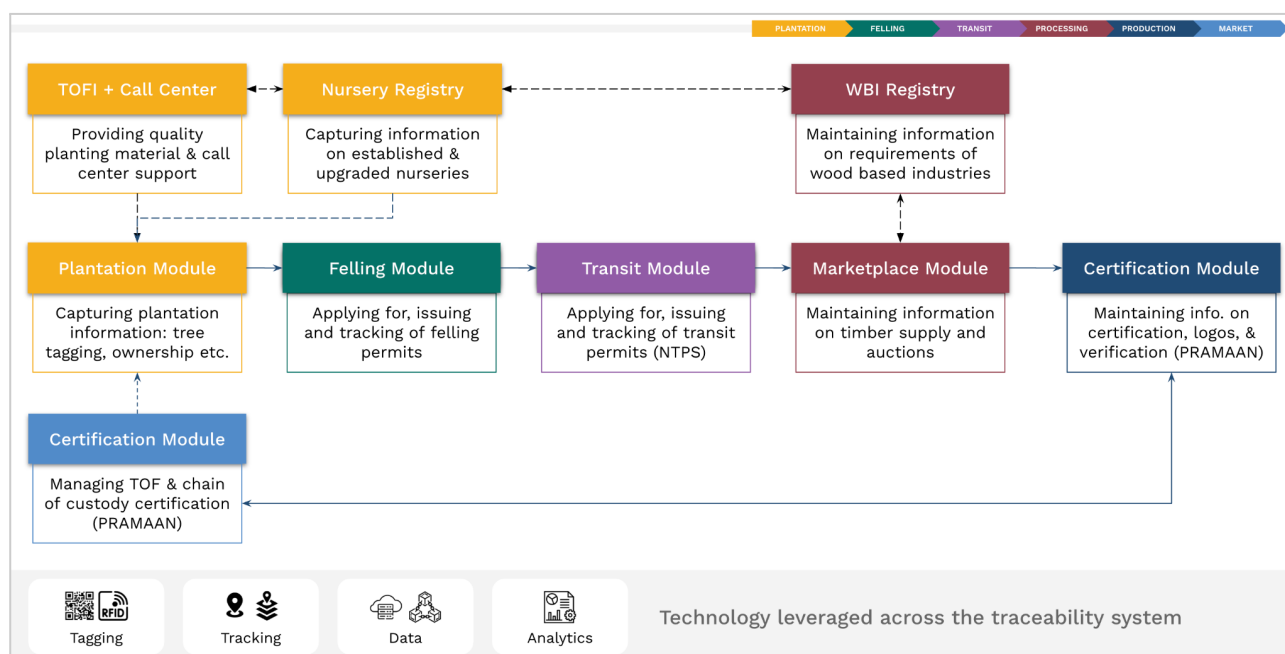
- Inputs are accessible, and farmers are incentivized to plant timber
- Felling is permitted through clear, digital, and accountable mechanisms
- Transit is harmonized and paperless, with a unified national system

- Certification and traceability systems are affordable and credible
- And markets, domestic and international, recognize and reward verified Indian timber

The reform effort, as outlined in the following sections, approached agroforestry not as a series of disconnected problems, but as a value chain to be rewired for scale, equity, and impact.

Unlocking the Value Chain: Strategic Interventions

To realize the vision of agroforestry as a viable, income-generating opportunity for Indian farmers, GDi Partners, in collaboration with the Ministry of Environment, Forest and Climate Change (MoEFCC), undertook a systemic transformation of the agroforestry ecosystem. Each intervention was designed not as a standalone fix, but as a part of a tightly integrated architecture that connects policy, technology, institutions, and markets across the entire value chain.



Enabling Plantation - Strengthening the Foundation

Challenge: The viability of agroforestry begins at the point of plantation; where a farmer decides whether to invest in tree crops based on economic confidence, biological viability, and institutional support. However, this first link in the value chain is beset with challenges. Chief among them is the lack of access to certified, high-quality planting material. An estimated 90% of agroforestry saplings are of uncertified or substandard quality, limiting survival rates and long-term yield potential.

Further, most high-value timber species, such as teak, rosewood, and eucalyptus, have long gestation periods, typically requiring 8–15 years to mature. This time horizon is misaligned with the economic planning cycles of smallholders, who need quicker, more predictable returns. Compounding this is the absence of species-specific market visibility and demand forecasting, which leaves farmers making speculative planting decisions with limited confidence in offtake or price realization.

Intervention: To address these foundational constraints, a two-pronged reform strategy was adopted:

1. Digital Enablement via Nursery Registry: Through the National Timber Management System (NTMS) - a digital nursery registry module was conceptualized. This registry serves as an open-access directory of certified nurseries, geo-tagged and verified, that offer approved clones and species-specific planting material. Farmers can now directly identify and access reliable sapling sources suited to their agro-climatic conditions.

2. **Institutional Push for Clonal Research:** In parallel, the MoEFCC initiated institutional convergence with forestry research bodies to fast-track the development and deployment of shorter-rotation, disease-resistant clonal species. These improved clones — developed through collaborations with Indian Council of Forestry Research and Education (ICFRE), ICAR, and private sector leaders - aim to cut the economic rotation period by 30–50%, offering harvest windows of 4–7 years. This shortens the investment horizon and increases adoption willingness among farmers.

Outcome: These interventions de-risk the first step in the agroforestry journey by improving planting confidence, increasing sapling survival rates, and reducing time to income. Access to verifiable, high-quality planting material not only increases productivity but also strengthens the traceability chain from the moment of plantation, a key requirement for future certification and market access. By reducing the uncertainty surrounding long-rotation timber species, the groundwork is laid for a more inclusive, scalable model of agroforestry adoption.

NATIONAL AGROFORESTRY POLICY 2014  सत्यमेव जयते GOVERNMENT OF INDIA DEPARTMENT OF AGRICULTURE & COOPERATION MINISTRY OF AGRICULTURE NEW DELHI	2.8 Weak market access for agroforestry produce: The marketing infrastructure (market yard, etc.), including “price discovery” mechanisms for agroforestry produce in general are unavailable in the country except in few states which have either developed exclusive marketing infrastructure for agroforestry produce or have dovetailed with the regulated agriculture commodity marketing systems. As a result, it is largely a buyer’s market and the middlemen get the major share in profit. 2.6 Dearth of quality planting material: Planting material such as seeds, seedlings, clones, hybrids, improved varieties, etc. are generally of mixed quality and not available commonly, particularly in the resource poor regions. It is estimated that only about 10% of planting material is of high quality, the rest without any guarantee for quality standards. This issue mainly relates to the production, handling, distribution and planting & supervision of high quality planting material. 5.5 Improving famers’ access to quality planting material 5.5.1 Certification of nurseries, seeds and other planting materials for agroforestry is required to make available good quality planting material at the required scale. Institutional mechanism for registration of nurseries and their accreditation should be established. 5.5.2 Private sector can play an important role in augmenting supplies of improved planting stock as demonstrated in case of poplar and clonal eucalyptus plantations. Hence, the private sector participation should be encouraged in production and development of supply chain of quality planting materials.
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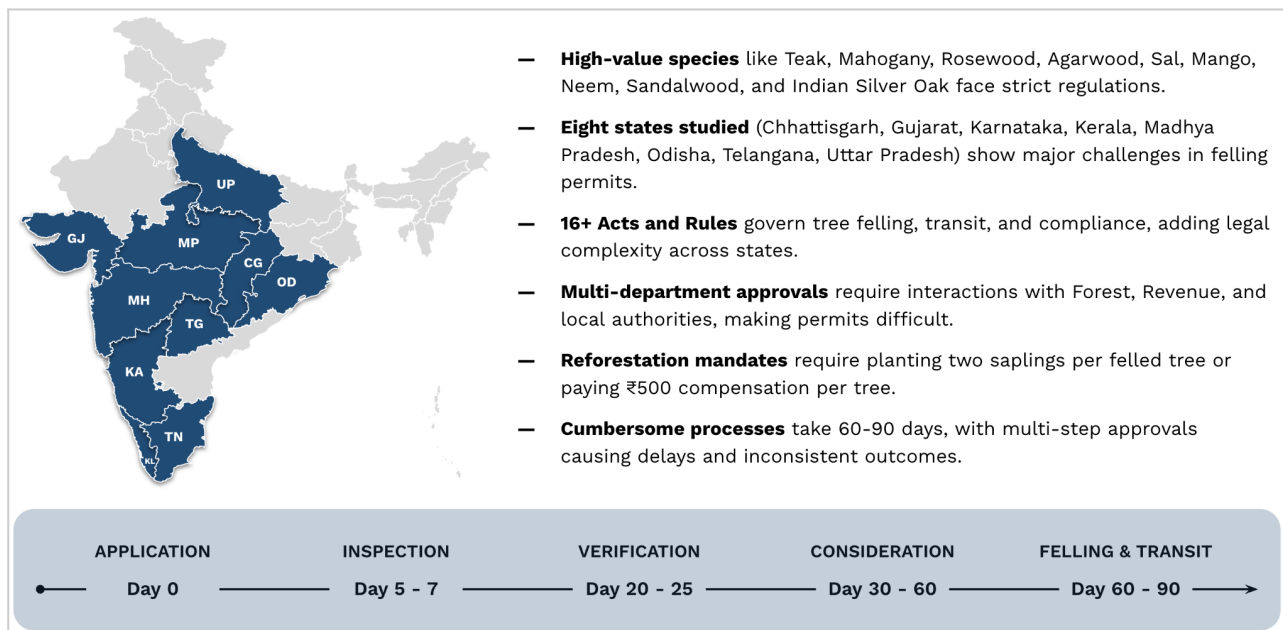
Strategic Implication: Plantation enablement is not merely a technical input issue, it is a strategic trigger that influences farmer participation, downstream traceability, and eventual income realization. The integration of nursery accreditation into a unified digital platform ensures that the entire agroforestry value chain begins with quality, legality, and transparency - positioning India’s timber economy for long-term sustainability and global competitiveness.

Enabling Felling – Regulatory Simplification through Model Rules

Challenge: The act of harvesting a tree grown on private farmland, a logical culmination of the farmer’s investment, is often treated in India with the same suspicion and regulatory complexity as logging from natural forests. Despite owning the land and having planted the trees, farmers are subject to a cumbersome, opaque, and highly variable regime for tree felling across states. In many regions, felling requires permissions from multiple departments, including Forest, Revenue, and Panchayat, and can involve over 10 procedural steps and long waiting periods.

This ambiguity is particularly acute for high-value native species like teak, rosewood, or gurjan - species whose harvest is either outright restricted or shrouded in legal uncertainty, even when cultivated on private land. The result is a chilling effect on timber plantation: farmers are reluctant to invest in species they may never be able to monetize, leading to a suboptimal use of farmland and continued dependence on timber imports.

Intervention: To overcome this bottleneck, GDi undertook a comprehensive diagnostic of felling regulations across 10+ states, mapping over 20 regulatory regimes. This was followed by the development of a harmonized legal framework: the Model Rules for Tree Felling on Private Agricultural Land.



These rules were crafted to balance three imperatives:

1. Farmer Rights and Ease of Doing Business,
2. State Oversight and Conservation Assurance, and
3. Legal Clarity for Plantation-based Timber Harvesting.

The Model Rules streamline the felling approval process through:

1. A self-declaration mechanism for exempted species.
2. A single-window digital application for felling permissions via NTMS.
3. Integration with land ownership verification APIs.
4. Defined timeframes for departmental response and auto-approval provisions.
5. Strong penalties for falsification, ensuring enforcement integrity.

Output:

- Model Rules, vetted by legal experts and forest officials, issued by the Ministry of Environment, Forests, and Climate Change
- Endorsement by MoEFCC, and presentation to all 36 States and Union Territories.
- Institutional feedback and readiness assessments conducted via multistakeholder consultations.
- Integration with NTMS to enable digital felling workflows.

Outcome: The felling reform removes one of the most prohibitive risks from agroforestry. It gives farmers regulatory predictability and legal protection, allowing them to invest in tree crops with confidence. By reducing bureaucratic

friction, it accelerates the monetization window of plantations, which is critical for smallholder adoption. At the same time, the rules embed sufficient checks, including traceability via NTMS and integration with land records, to prevent illegal logging and maintain ecological safeguards.

F. No. FP-8/8/2025-FP [E-261593] Government of India Ministry of Environment, Forest & Climate Change (Forest Policy Division) Agni Wing, 5th Floor Indira Paryavaran Bhawan, Jor Bagh Road, Aliganj, New Delhi - 110 003 Dated: June, 2025 To, Chief Secretary of all States and UTs. All State Governments / Union Territories Subject: Model Rules for “Felling of Trees in Agricultural Land” – regarding. Sir/Madam, The Government of India has been consistently promoting agroforestry as a viable solution to address multiple national priorities, including doubling farmers’ income, enhancing tree cover outside forests, mitigating climate change, minimizing import of timber, and ensuring sustainable land use. Agroforestry not only enhances ecosystem services but also plays a critical role in diversifying livelihoods, increasing agricultural resilience, and contributing to India’s Nationally Determined Contributions (NDCs) under the Paris Agreement. 2. To unlock the full potential of the agroforestry sector, it is imperative to establish an enabling regulatory framework that provides predictability and ease of doing business for farmers, entrepreneurs and investors. A key barrier identified by stakeholders is the lack of clear, harmonized rules for felling of trees grown on agricultural land, which hampers both cultivation and marketing of agroforestry produce. 3. In light of this, the Ministry convened two rounds of consultations with States on 24th April 2025 and 19th May 2025, where detailed discussions were held to solicit views on proposed reforms, and the need to streamline procedures related to felling of trees under agroforestry. Based on the feedbacks received, model rules for felling of trees in agricultural land have been developed and are being shared with all States and UTs (copy enclosed).	MODEL RULES FOR FELLING OF TREES IN AGRICULTURAL LANDS WHEREAS the [Government of [Name of State]/[Name of UT] Administration], recognizes the critical role of agroforestry in promoting sustainable agricultural practices and balancing ecological needs with economic development. AND WHEREAS agroforestry practices are instrumental in enhancing tree cover, mitigating climate change, improving soil fertility, conserving biodiversity, water conservation and generating livelihood opportunities for rural communities; AND WHEREAS the promotion of agroforestry aligns with the objectives of the National Agroforestry Policy, 2014, and India’s commitments under international frameworks such as the United Nations Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change; AND WHEREAS it is necessary to provide a streamlined regulatory framework for the promotion, maintenance, felling of trees and certification of timber produced from non-forest lands, thereby encouraging landowners, farmers, and stakeholders to adopt agroforestry practices while ensuring sustainable resource management; AND WHEREAS effective market linkages are essential for creating economic opportunities and fostering sustainable agroforestry practices by connecting plantations with wood-based industries and consumers, thereby ensuring that the efforts of landowners and farmers result in tangible financial benefits; AND WHEREAS agroforestry systems are identified as critical for addressing India’s growing demand for timber, fuelwood, and fodder while reducing reliance on imports and alleviating pressure on natural forests. AND WHEREAS agroforestry has the ability to enhance farmer incomes, improve soil organic carbon, conserve water resources, and significantly contribute to India’s carbon sequestration goals, thereby promoting sustainable agricultural productivity and resilience. AND WHEREAS the need is felt for the establishment of a streamlined regulatory framework to simplify procedures for tree felling, transit, and certification, thereby incentivizing private participation and creating opportunities for farmers and stakeholders to adopt agroforestry practices. AND WHEREAS there is a need to promote high-value timber species, enabling India to achieve self-reliance in timber production and emerge as a global leader in sustainable timber markets. NOW, THEREFORE, the following Rules are notified by the [Government of [Name of State]/[Name of UT] Administration] under section [relevant section] of [Name of State/UT act for regulating tree felling in non-Forest areas] and section [relevant section] of [Name of State/UT act for Forest areas] (in case of felling of trees of species protected under the said act)
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Strategic Implication: Unlocking felling is the midpoint lever of the agroforestry value chain: it links upstream decisions on plantation with downstream access to markets and certification. Without a clear, scalable, and farmer-friendly regime for harvesting trees, the entire timber economy remains vulnerable to informality and stagnation. With these Model Rules, India takes a major step towards treating agroforestry as a legitimate agricultural enterprise; governed by trust, technology, and transparent rules, rather than suspicion and gatekeeping.

Enabling Transit – One Nation, One Pass

Challenge: Transporting harvested timber - even legally grown on private agricultural land - has historically been governed by a patchwork of state-specific rules. Every state maintains different species lists, permit formats, exemptions, and enforcement protocols. For farmers and traders, this meant navigating a labyrinth of approvals to transport produce across districts or state lines - often involving paperwork, delays, and exposure to rent-seeking. This fragmentation increased the cost of compliance, discouraged legal participation, and reinforced informal market channels. It also hindered inter-state timber trade and constrained farmers from accessing more profitable markets beyond local or state boundaries.

Intervention: In response, MoEFCC launched the National Transit Pass System (NTPS), a unified, digital platform designed to streamline and standardize the issuance of transit permits for agroforestry timber. Conceptualized under the “One Nation, One Pass” principle, NTPS offers:

- A central online portal to apply for transit permits.
- QR-coded digital passes verifiable by enforcement officers.

- Centralized record-keeping for issuance and validity status.
- Paperless, mobile-enabled workflows designed for ease of access.

This system was designed to remove state-level inconsistencies and offer a consistent legal pathway for moving timber grown outside forests, without compromising regulatory oversight.

Output:

- NTPS operationalized across 29 States and UTs.
- Over **1.5 lakh passes were issued**, enabling legal movement of timber across jurisdictions.
- **₹5+ crore in transit fee collection digitized**, reducing cash transactions and rent-seeking.
- Operational dashboards and real-time verification tools rolled out for enforcement.

States / UTs	36												
Onboarded States / UTs - Amendment	29						7						
	24						7						
	Amended						Pending						
Bank Integration Stage	21						5						
	Complete						Not Applicable						
	Pending						Complete						
Go-Live on Portal	19						0						
	Live						0						
	Ongoing						0						

Outcome: NTPS has reduced transaction costs, increased transparency, and offered legal mobility for agroforestry produce - enhancing market access for farmers and simplifying enforcement for the state. The platform has helped shift perception of agroforestry from a grey-area activity to a regulated, formal livelihood opportunity, backed by digital legitimacy.

Strategic Implication: NTPS marks a pivotal leap in the 'ease of doing agroforestry'. By digitizing and standardizing transit, it ensures that a farmer's decision to plant and harvest is not stalled at the gate of market access.

Enabling Certification – PRAMAAN

Challenge: Despite India's rich endowment of high-value timber species, the country has remained largely excluded from premium timber markets due to the absence of a credible, accessible, and nationally recognized certification system. As of recent years, less than 1% of Indian forests and wood sources are certified, primarily due to the high cost and misalignment of global certification schemes (such as FSC and PEFC) with Indian forest governance and farmer realities. This certification vacuum limits traceability, weakens buyer confidence, and excludes Indian timber from international markets that require assurance on legality, sustainability, and ethical sourcing. For farmers and private growers, especially those investing in agroforestry, the lack of a legitimate and affordable pathway to prove the origin and sustainability of their timber has been a major disincentive to participate formally in the value chain.

Intervention: Recognizing this systemic gap, the Ministry of Environment, Forest and Climate Change (MoEFCC) - with the support of GDi - launched PRAMAAN - India's first indigenous and nationally governed forest and wood certification system. PRAMAAN was designed to provide end-to-end verification for legal and sustainable timber,

starting with plantation and culminating in final product certification. It is a public, affordable, and inclusive alternative to global certification models, specifically tailored for India's forestry and agroforestry contexts.

The certification system comprises three interlinked components:

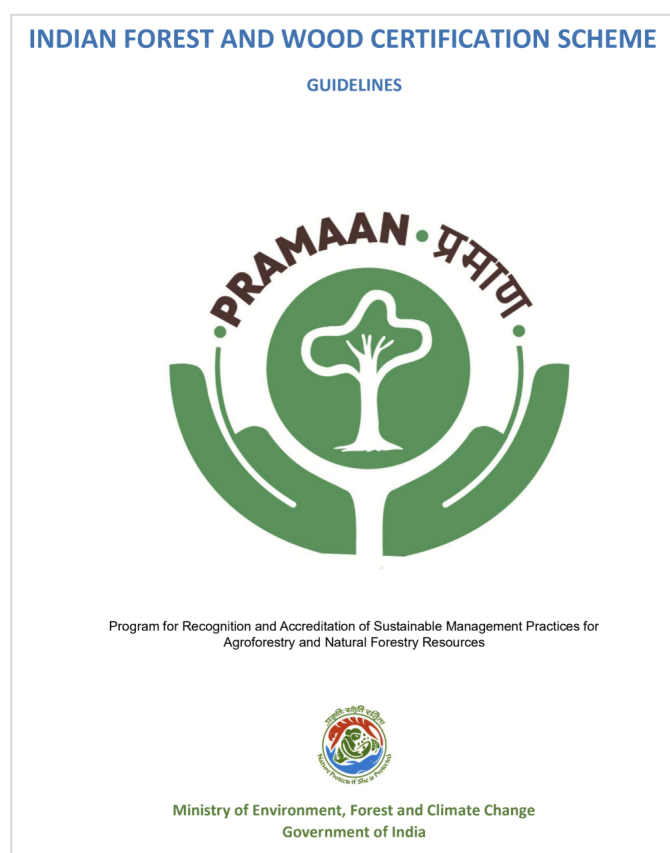
1. Forest Management Certification – for state-managed recorded forests.
2. Trees Outside Forests (ToF) Certification – specifically for agroforestry plantations and private lands.
3. Chain of Custody (CoC) Certification – to trace the flow of timber through the supply chain, from origin to product.

Institutional Architecture:

1. Indian Forest and Wood Certification Council (IFWCC) – apex governance body.
2. Indian Institute of Forest Management (IIFM) – Scheme Operating Agency.
3. NABCB – national accrediting body for certification agencies.

Output:

- PRAMAAN scheme framework designed, peer-reviewed, and operationalized.
- Certification standards, procedures, and trademark guidelines drafted.
- Institutional ecosystem notified and empowered.
- Recognition under Indian regulatory frameworks to enable enforcement and legitimacy.



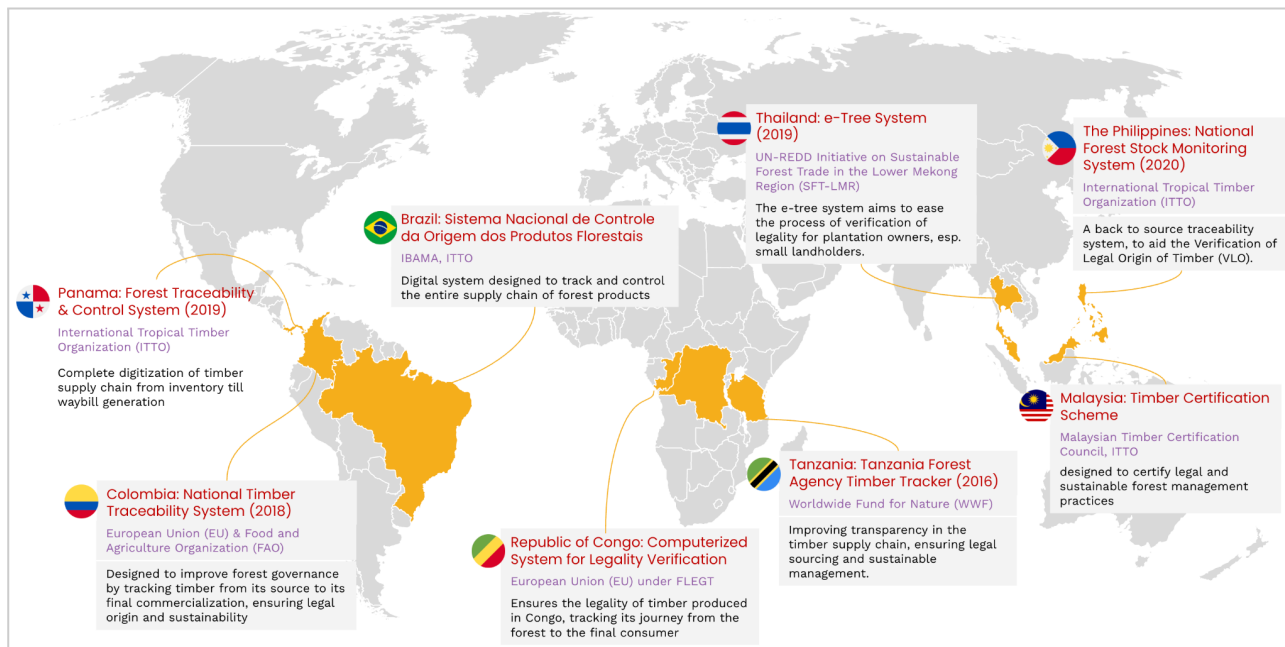
Outcome: PRAMAAN creates a trusted, scalable certification backbone that enables Indian timber to access domestic and international markets where traceability and sustainability are prerequisites. It gives agroforestry practitioners - from smallholders to aggregators - a credible route to command a premium for verified timber, while aligning with legality assurance frameworks under evolving global trade laws.

Strategic Implication: Certification is not merely a compliance tool - it is a market gateway. With PRAMAAN, India now has a national system that integrates legality, sustainability, and traceability in a form that is designed for inclusion, scale, and farmer participation. It offers India the strategic means to shift from being a commodity timber importer to an exporter of certified, value-added wood - while empowering farmers as verified, visible producers in that value chain.

Enabling Traceability – TRACE

Challenge: India's timber value chain, especially for agroforestry, is characterized by fragmentation and opacity. Plantation data, felling permissions, transit records, and market transactions are scattered across jurisdictions, often

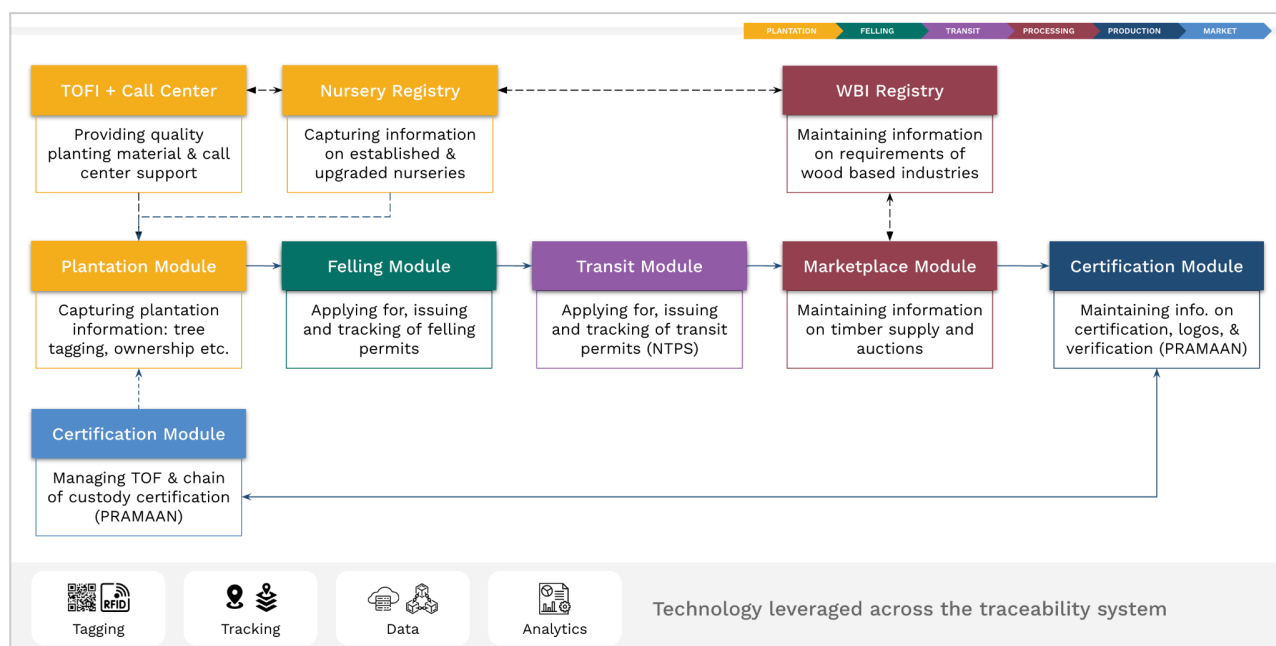
offline or inconsistent. This absence of end-to-end traceability weakens regulatory oversight, undermines confidence in legality and sustainability, and limits Indian timber's ability to meet the traceability expectations of global buyers and due diligence laws. For farmers, this lack of digital infrastructure translates to inefficiency, duplication of paperwork, and no clear visibility into how their produce will be perceived or priced downstream. For regulators and buyers, it means continued reliance on manual verification and low trust in the provenance of wood.



Intervention: To address this structural barrier, the Ministry of Environment, Forest and Climate Change (MoEFCC), in collaboration with GDi Partners, conceptualized and designed the National Timber Management System (NTMS) - branded as TRACE, short for Timber Registry for Agroforestry Certification and E-marketplace. TRACE is envisioned as a comprehensive, digital-first platform that brings together the full timber lifecycle - from plantation to market - under a single, transparent, and user-friendly ecosystem. It is designed to be modular, interoperable with state systems, and aligned with national certification (PRAMAAN) and transit (NTPS) reforms.

Key Design Components Include:

- Registration Module: Digital verification of land and tree ownership, integrated with state revenue APIs.
- Plantation Module: Geotagged records of planted species, dates, and survival metrics.
- Felling Module: Workflow to apply for and process felling permissions through an accountable and time-bound mechanism.
- Transit Module: Seamless permit generation integrated with NTPS.
- Forecasting Module: Aggregated planting data for predictive analytics and market intelligence.
- e-Marketplace Module: Conceptual interface for connecting certified producers with verified buyers through transparent price discovery mechanisms.



Output:

- Detailed software requirement specifications (SRS) prepared.
- Platform architecture conceptualized and modules defined.
- Vision document circulated among MoEFCC and state partners.
- Readiness assessments and early feedback consultations initiated.

Outcome (Projected): Once developed, TRACE will serve as the digital backbone of India's agroforestry value chain - offering real-time visibility into legal timber flows, strengthening regulatory compliance, and unlocking new market opportunities. It will reduce transaction friction, improve enforcement efficiency, and create a verified data trail from tree to product - foundational for certification, due diligence, and trade.

Strategic Implication: TRACE is more than a digital platform - it is the institutional nerve center for a modern, market-ready agroforestry economy. Its conceptualization marks a decisive move toward data-driven forestry governance, where transparency, accountability, and farmer participation are embedded by design. As it moves toward development, TRACE will integrate and amplify the impact of all other interventions - from felling reforms to PRAMAAN certification - ensuring India's timber economy is future-ready, farmer-led, and globally credible.

From Reform to Resilience – Policy and Institutional Impact

From Conservation-First to Market-Integrated Forestry

For decades, India's forestry policy has been driven primarily by conservation objectives - a necessary stance in a country grappling with deforestation, biodiversity loss, and ecological degradation. However, this conservation-first lens, when applied uniformly, often led to blanket regulatory barriers that hindered legal, farmer-led timber cultivation, even on private land.

The interventions outlined in this report mark a **strategic policy pivot** - from viewing tree felling and timber movement as risks to be restricted, to viewing **agroforestry as a regulated economic opportunity** to be enabled. This shift is not about compromising conservation; it is about **aligning forest governance with sustainable rural development, making forests and trees an asset for both ecology and economy.**

Institutional Architecture for Scale and Sustainability

This reform effort didn't stop at policy changes - it created the institutional bedrock needed for long-term impact. This institutional design created not only vertical integration (from central policy to state implementation) but also **horizontal convergence** - aligning forestry, agriculture, and market systems into a common agroforestry agenda.

Policy Alignment at National and Global Levels

The agroforestry reforms also achieved alignment with national policy frameworks and international platforms:

- The **Economic Advisory Council to the Prime Minister (EAC-PM)**, in its 2024 report, explicitly endorsed the same set of value chain bottlenecks and recommended interventions that this program delivered: a national certification system, a unified transit pass platform, and a single-window clearance system for agroforestry operations.
- The conceptual and policy groundwork aligns with India's commitments to **UNFF (United Nations Forum on Forests)** and **COFO (Committee on Forestry, FAO)**, where legality assurance, traceability, and inclusive forest-based livelihoods are key priorities.
- Internally, the reforms are now influencing how the **National Agroforestry Policy (2014)** is operationalized, serving as a live model for how to move from vision to implementation - particularly around institutional convergence, farmer onboarding, and digital governance.

Systemic Shift in State Capacity

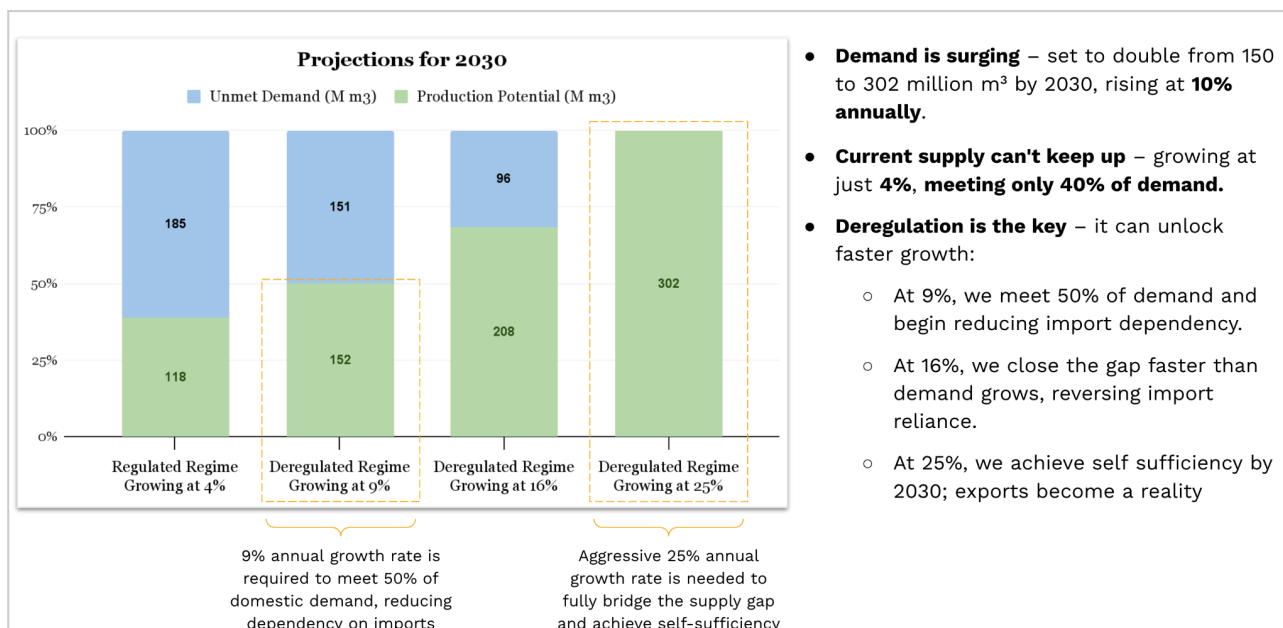
Perhaps the most durable impact of this reform program lies in its effect on **state capacity and mindset**. Through model rules, NTPS implementation, and institutional training, the program has reoriented state forest departments to become **enablers rather than gatekeepers**. By demonstrating how compliance and facilitation can co-exist, it has unlocked a governance ethos where **farmer participation and forest protection are not seen as mutually exclusive**.

Measurable Impact & Future Potential

The reforms undertaken across India's agroforestry value chain - from regulatory harmonization to certification and digital design - have begun to lay the foundation for measurable shifts in how timber is grown, traded, and valued. While many of the deeper economic and environmental impacts will be realized in the medium to long term, the early indicators and projected pathways highlight **transformational potential** across four key dimensions:

Reduction in Timber Import Dependence

India currently imports timber worth over ₹22,000 crore annually, despite being ecologically suited to grow high-value species such as teak, rosewood, and gurjan. Much of this import reliance is not driven by agronomic limitations but by regulatory friction and the absence of enabling systems for domestic cultivation and trade.



Analysis shows that current domestic timber production is growing at only **4% annually**, meeting just **40% of demand**. By 2030, national timber demand is projected to **double** - rising from **150 million m³ to 302 million m³**, growing at 10% per year. Without intervention, the unmet demand could balloon to **185 million m³**, further deepening import dependence.

However, policy reform and deregulation could dramatically shift this trajectory:

- A **9% annual growth rate** under a deregulated regime would allow India to meet **50% of total demand**, while remaining reliant on imports.
- At **16% annual growth**, domestic production could **outpace demand growth**, reversing import dependency trends altogether.
- An **aggressive 25% growth scenario** would close the supply-demand gap entirely, enabling **self-sufficiency by 2030** and positioning India as a **net timber exporter**.

These projections underscore that India is not structurally import-dependent - it is **procedurally constrained**. Reforms like PRAMAAN (certification), NTPS (transit enablement), Model Rules (felling simplification), and the future TRACE system (traceability) collectively create the ecosystem necessary for **unlocking domestic production at scale**.

Income Diversification for Smallholders

Agroforestry offers farmers a critical hedge against seasonal income volatility. Timber plantations provide **staggered, high-value returns** that complement crop cycles and build financial buffers.

Reforms such as:

- Simplified felling and transit through NTPS and Model Rules,
- Legal recognition and certification of produce through PRAMAAN,
- Future integration with digital market access via TRACE,

together make it possible for smallholders to enter previously inaccessible timber markets: **shifting agroforestry from a long-rotation gamble to a formally rewarded, verified income stream**.

Market Credibility through Certification and Traceability

With the introduction of PRAMAAN and the conceptual design of NTMS/TRACE, India now has a roadmap for **institutionalizing legality, sustainability, and origin assurance**. These are prerequisites for accessing:

- **High-value export markets** that mandate Chain of Custody (CoC) and legality assurance.
- **Corporate procurement** and green building segments domestically, which increasingly rely on certified materials.

By certifying both Trees Outside Forests (ToF) and state forests, and by designing a traceability infrastructure that aligns with PRAMAAN, India is poised to make **“Indian Certified Timber” a recognized and premium product class**.

Ecological Resilience and Climate Co-Benefits

Agroforestry not only enhances income, but also directly contributes to:

- **Carbon sequestration**, especially with tree species integrated on fallow or degraded lands.
- **Soil health restoration** and improved water retention through mixed cropping and tree-root systems.
- **Biodiversity enhancement**, particularly in fragmented agricultural landscapes.

These environmental dividends position agroforestry as a **critical pathway for India’s climate commitments**, including land restoration, emissions mitigation, and adaptation goals.

India’s agroforestry economy is now positioned not only to correct legacy inefficiencies but to **lead a new model of climate-aligned, income-secure rural growth** - one that is **digitally verified, institutionally anchored, and globally credible**.

Conclusion: Timber Atmanirbharta - Future-Ready, Farmer-Led

India stands at the threshold of a structural transformation - from a fragmented, import-reliant timber economy to a **domestically productive, digitally enabled, and farmer-powered system**. Agroforestry, long held back by procedural burdens and institutional silos, has now been repositioned as a **viable and scalable pathway to rural income security, ecological restoration, and economic competitiveness**.

This transformation is not theoretical - it is already underway. Through the combined efforts of the Ministry of Environment, Forest and Climate Change (MoEFCC), GDi Partners, and a wide coalition of state and institutional actors, India has:

- **Simplified the felling regime** to make tree harvesting legal, timely, and farmer-friendly, through the issuance of Model Rules.
- **Digitized timber transit** through NTPS, making “One Nation, One Pass” a reality for 29 states.
- **Established PRAMAAN**, the country’s first indigenous forest and wood certification system - giving Indian timber a credible route to premium markets.
- **Conceptualized NTMS / TRACE**, a digital infrastructure that will unify plantation, compliance, and market access into a seamless, transparent ecosystem.

Together, these reforms have built not only systems, but **institutional trust**, enabling states to govern better, farmers to participate safely, and markets to recognize Indian timber as verified and valuable.

Yet, the journey is just beginning. Agroforestry’s full potential will be realized only when these interventions are **adopted at scale, institutionalized across states, and embedded in farmer-facing systems**. This means:

- Rolling out TRACE as a single-window platform for the entire timber value chain.
- Investing in farmer awareness, onboarding, and access to quality planting material.

- Aggregating demand through certified market channels, buyer networks, and export facilitation.

The vision is clear: an India where **timber farming is no longer informal or invisible**, but an integrated pillar of rural prosperity — **regulated by data, governed by trust, and led by farmers**.

In doing so, India won't just reduce imports or meet climate targets, it will build a **resilient, verified, and inclusive green economy**, rooted in its farmers and scaled for the world.