BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI

Original Application No. 555 of 2024 (PB)

WITH

Original Application No 20 of 2025(PB)

In the matter of:

News item titled "India lost 2.33 million hectares of tree cover since 2000 Global Forest Watch" appearing in The Indian Express date 13.04.2024.

And

News Item titled "Assam's forests shrink by 83.92 sq km in just two years Report" appearing in the Assamtribune.com dated 22.12.2024.

REPORT FILED BY PRINCIPAL CHIEF CONSERVATION OF FORESTS ON BEHALF OF 27TH RESPONDENT- STATE OF TAMIL NADU

THROUGH

THIRU . SRINIVAS R. REDDY, I.F.S,

PRINCIPAL CHIEF CONSERVATOR OF FOREST,

GOVERNMENT OF TAMIL NADU.

BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI

Original Application No.555 of 2024

IN THE MATTER OF:

Tribunal on its own motion SUO MOTU
Based on the News Item in 'The Indian Express', dt.13.04.2024,
"India lost 2.33 million hectares of tree cover since 2000 Global Forest Watch".

And

The Additional Chief Secretary to Govt. of Tamil Nadu, Environment, Climate Change and Forest Department, Chennai and Ors. ....Respondent(s)

COUNTER AFFIDAVIT FILED ON BEHALF OF THE 27th RESPONDENT

I, Srinivas R Reddy, IFS, aged 59 years, son of Ramachandra Reddy, presently serving as the Principal Chief Conservator of Forests (Head of Forest Force), Chennai, do hereby solemnly affirm and sincerely state as follows:

2. I am well acquainted with the facts and circumstances of the case based on the records available. I have been authorized to file this counter affidavit on behalf of the Additional Chief Secretary to Govt. of Tamil Nadu, Environment, Climate Change and Forest Department, i.e (27th) respondent herein.

Personal Assistant,
O/o. Principal Chief Conservator of Forests,
Guindy-Velachery Main Road,
Near Kanniga... Check Post,
Guindy, ... 032.

Principal Chief Conservator of Forests,
(Head of Forest Force),
Chennai-32.

3. It is respectfully submitted that, as per the *India State of Forest Report 2023* Volume-1 (Forest Survey of India, Ministry of Environment, Forest & Climate Change – enclosed), the Forest Cover in Tamil Nadu is 26,450.22 sq.km, and the Tree Cover is 5,370.72 sq.km.

4. It is respectfully submitted that the Forest Cover has remained largely stable since 2000. According to the India State of Forest Report 2021 and 2023, the Forest Cover was 26,511.18 sq.km in 2021 and 26,450.22 sq.km in 2023.

5. It is respectfully submitted that the marginal reduction in forest cover reported in the India State of Forest Report 2023 is not due to deforestation or diversion of forest land, but is primarily attributable to the systematic removal of invasive species such as Lantana camara, Prosopis juliflora, Eucalyptus and Wattle inside and outside Forest areas.

6. The Hon'ble Madras High Court in Saravanan v. State of Tamil Nadu [W.P.(MD) No.3633 of 2014, order dated 22.08.2024] directed that every forest division and sanctuary must ensure the removal of at least 50 hectares of Lantana camara each month, and by subsequent order dated 04.03.2025, extended the same direction to the removal of Prosopis juliflora, with a further mandate that cleared areas be restocked with native biodiverse species i.e.,Vengai, Nelli, Tamarind, Pungan, Naval, Koyya, Neem etc.

7. The reported reduction in forest cover is therefore a transitional reflection of this invasive species removal exercise, which is a positive ecological measure. The long-term outcome will be an increase in native forest cover and biodiversity.

8. It is respectfully submitted that the Tamil Nadu Forest Department, being a pioneer in forest conservation, has formulated exemplary schemes in forest conservation aligning with the needs and nature of activities required for that phase. This involves afforestation of

Personal Assistant,
O/o. Principal Chief Conservator of Forests,
Guindy-Velachery Main Road,
Near Kannigapuram Check Post,
Guindy, Chennai - 600 032.

...Chief Conservator of Forests,
(Head of Forest Force),
Chennai-32.

degraded areas through Joint Forest Management, ex-situ and in-situ conservation of biodiversity, watershed development works in all forest areas falling in catchments, protection of existing forests against illicit felling, fire etc., creation of tree-based capital assets in tribal areas and their socio-economic development, increase of tree cover in private lands through extension forestry, emphasizing community forestry, updating forest technology through research, and human resource development.

9. It is respectfully submitted that the Tamil Nadu Forest Department, with the external assistance of the Japan International Cooperation Agency, hereafter (JICA), has implemented forestry projects for more than 25 years. The Tamil Nadu Afforestation Project (TAP) Phases I and II focused on "Ecological Restoration of forest areas through Joint Forest Management". This led to massive regeneration of forest and economic development of fringe villages, restoring more than 6,880 sq.km of degraded forests adjoining 2,317 forest fringe villages over the last 20 years (1997–2013) with a total outlay of Rs. 1,255 crores in two phases.

10. On sustainability, it is respectfully submitted that Tamil Nadu Afforestation Project laid primary focus on poverty alleviation, capacity building, and empowerment of local people, along with ecological restoration of Forest. Under the project, 2,317 Village Forest Committees were formed, which still contribute to income generation through micro-credit revolving funds as well as conservation and protection of forest resources. 28,725 check dams and 4,227 percolation ponds were constructed, contributing to wildlife and water conservation, maintained through ongoing Forest Department schemes periodically.

11. It is respectfully submitted that every project phase was evaluated by JICA, which awarded Tamil Nadu Afforestation Project Phases I and II Grade 'A'(copy enclosed), the highest evaluation rating for JICA projects in India, after measuring outcomes and impacts.

Personal Assistant,
O/o. Principal Chief Conservator of Forests,
Guindy-Velachery Main Road,
Near Kannigapuram Check Post,
Guindy, Chennai - 600 032.

Principal Chief Conservator of Forests,
(Head of Forest Force),
Chennai-32.

12. In continuation, the Tamil Nadu Biodiversity Conservation and Greening Project (TBGP, 2011–12 to 2018-19), with assistance from JICA, strengthened biodiversity conservation and undertook large-scale tree planting on private lands. About 8.32 crore seedlings were planted in private lands in 7805 villages covering 1.52 lakh hectares benefiting 1,27,000 farmers. The project emphasized increasing tree cover in rural areas, promoting community participation, and enhancing livelihoods. Ex-post evaluation by JICA awarded the project Grade 'A', noting that operational and effect indicators were fully achieved or exceeded.

13. The key operational and effective indicators under TBGPCCR are as follows:

Indicator	Baseline	Target (2 years after completion)	Actual (2021, 2 years after completion)
a. Number of protected areas intervened by the project		20	20
b. Number of community organizations established under the project		88	88
c. Number of small and marginal farmers who planted trees outside the recorded forest areas*		40,000	127,329
d. Plantation area outside the recorded forest areas (ha)		143,000	151,600
e. Survival rate of trees planted outside the recorded forest areas (%) **		70	72
f. Number of TNFD staff trained		5,740	5,423
g. Livelihood improvement (INR/year)	34,031		110,182

Source: Materials provided by JICA and the executing agency

* Although the term "farmers" is used, non-farming households also participated in TCPL and are included in the actual figure.

** Both the target and actual figures are for two years after the planting.

14. It is respectfully submitted that the ongoing Tamil Nadu Biodiversity Conservation and Greening Project for Climate Change Response (TBGPCCR) (2022–23 to

Personal Assistant,
O/o. Principal Chief Conservator of Forests,
Guindy-Velachery Main Road,
Near Kannigapuram Check Post,
Guindy, Chennai - 600 032.

Chief Conservator of Forests,
(Head of Forest Force),
Chennai-32.

2029–30) undertakes urban and peri-urban forestry, biodiversity conservation, mitigation of human-wildlife conflict, restoration of mangroves and seagrass areas, promotion of community-based eco-tourism, livelihood improvement for tribal communities, and capacity building of 5,400 beneficiaries. The key operational indicators are as follows:

Component	Target
Urban & Peri-urban Forestry – Carbon Storage	2,00,000 lakh MT
Restoration of Coral Reef Area (Blue Carbon) (East Coast)	3.6 ha
Restoration of Seaweed / Seagrass Area	Seaweed – 300 ha; Seagrass – 600 ha
Increased Mangrove Area	1,050 ha
Arrest rate of Human-Wildlife Conflict	10% reduction
Trees Outside Forest (TOF) Cover Increase	60,000 ha
Capacity Building Beneficiaries	5,400
Tribal Household Income Increase	25%

15. It is respectfully submitted that another ongoing scheme — Restoration of Degraded Forest Landscape — is under implementation for five years from 2021–22 to 2025–26 with financial assistance from National Bank for Agriculture and Rural Development (NABARD) at a total outlay of Rs. 481.03 crores. The project comprises restoration of degraded forest landscape (31,060 ha), restoration of Sandal landscape (304 ha), restoration of Mangrove landscape (820 ha), restoration of Red Sanders landscape (600 ha), restoration of Shola landscape, rejuvenation of Araniyar and Kosasthalaiyar landscapes, Soil and Moisture Conservation works, forest fire prevention and management, etc. Under the project, firelines were created for 6,266.50 km to prevent forest fire; a State Forest Fire Control Centre and 34 District Forest Fire Control Centres were established. The project has completed strengthening of 668 check dams and 327 percolation ponds; moreover, 210 check

Personal Assistant,
O/o. Principal Chief Conservator of Forests,
Guindy-Velachery Main Road,
Near Kannigapuram Check Post,
Guindy, Chennai - 600 032.

Principal Chief Conservator of Forests,
(Head of Forest Force),
Chennai-32.

dams and 195 percolation ponds were also constructed under the scheme as part of soil and moisture conservation works. The scheme also supports increase of Trees Outside Forests by formation of new central nurseries (5 nos.) and maintenance of existing 32 nurseries. Thirty-nine lakh seedlings were distributed free to farmers and institutions to increase tree cover.

16. It is respectfully submitted that TBGPCCR is undertaking various studies focusing on invasive alien species, urban heat island effect, human-wildlife conflict mitigation, assessment of timber requirement and study on marine ecosystem. Further, to ensure continuous community support on a sustained basis, livelihood opportunities are provided through Eco-Development Committees by imparting training on various skills, mainly in less-focused Eastern Ghats villages. With the able support and guidance of the Environment, Climate Change and Forests Department, Government of Tamil Nadu, the Tamil Nadu Forest Department continues its efforts in conservation, afforestation, protection and sustainable management of forest resources while adopting the latest technologies like Geographic Information System, with objectives of achieving 33% forest and tree cover as per the National Forest Policy, enhancing livelihood standards of forest-dependent communities, mitigating climate change and ensuring a safe earth for future generations.

17. It is respectfully submitted that Tamil Nadu State Compensatory Afforestation Fund Management and Planning Authority (CAMPA) undertakes compensatory afforestation and related activities in the State to restore degraded forest areas, increase tree cover, and mitigate environmental impacts, with annual plans and targets approved and monitored by the State CAMPA Authority. The afforestation achievements from 2010–11 to 2025–26 are as follows:

Personal Assistant,
O/o. Principal Chief Conservator of Forests,
Guindy-Velachery Main Road,
Near Kannigapuram Check Post,
Guindy, Chennai - 600 032.

Principal Chief Conservator of Forests,
(Head of Forest Force),
Chennai-32.

AFFORESTATION ACTIVITY UNDER TAMIL NADU CAMPA						
Sl. No.	Year	Name of Plantation (head-wise)	Target		Achievement	
			Area in Ha.	Amount (Rs. in crore)	Area in Ha.	Amount (Rs. in crore)
1	2010-11	Compensatory Afforestation	225.521	0.56375	225.521	0.5638
2	2011-12		270.951	0.745	265.951	0.7311
3	2012-13		130.875	0.35585	124.735	0.33993
4	2013-14		166.93	0.5008	166.93	0.4498
5	2014-15		170.868	0.68736	166.048	0.59154
6	2015-16		148.104	0.9997	148.104	0.9987
7	2016-17		65.124	0.4801	54.784	0.4118
8	2017-18		35.4	0.2408	35.4	0.2408
9	2018-19		44.64	0.5875	44.64	0.5875
10	2019-20		2.19	0.0293	2.19	0.0293
11	2020-21		0	0.0000	0	0.0000
12	2021-22		0	0.0000	0	0.0000
13	2022-23		146.38	8.8500	82.57	4.0726
14	2023-24		112.51	4.7538	99.76	4.1147
15	2024-25		149.59	4.0850	75.21	2.7767
16	2025-26		90.156	3.0425	Works under Progress	

18. It is respectfully submitted that the Government of Tamil Nadu launched the Green Tamil Nadu Mission (G.O. No. 126, Environment, Climate Change and Forests (FR-6) Department, dated 09-12-2021 - Enclosed) with the objective of increasing the tree and forest cover from 23.71% to 33% of the total geographical area of the State within the next ten years. The Mission focuses on improving biodiversity, forest productivity, trees on farmlands, urban and peri-urban landscapes, empowering local communities through green jobs, and augmenting the income of farmers.

19. It is respectfully submitted that the uniqueness of the Mission lies in the geo-referencing and geo-tagging of planted land parcels, which are uploaded on the web portal of the Green Tamil Nadu Mission to ensure accountability and transparency. A dedicated web portal (www.greentnmission.com) has been created to encourage multi-stakeholder

Personal Assistant,
O/o. Principal Chief Conservator of Forests,
Guindy-Velachery Main Road,
Near Kannigapuram Check Post,
Guindy, Chennai - 600 032.

Principal Chief Conservator of Forests,
(Head of Forest Force),
Chennai-32.

participation. So far, 7,000 volunteers, 175 Trusts, 170 Non-Government Organizations, and 28,381 public users have enrolled to join the Mission.

20. It is respectfully submitted that a toll-free tree helpline (1800-599-7634) has been installed to address public requests and grievances. The "TN Forest e-Nursery" web portal provides information on availability of seedlings in nurseries across the State. The "Dial a Tree" facility allows online purchase and door delivery of seedlings, currently available in Chennai with phased expansion to other cities.

21. It is respectfully submitted that quality seedlings are being raised in 1,205 nurseries across all 38 Districts and about 10.86 crore seedlings were planted in the last three years, covering an area of 1.73 lakh hectares. The activity involved multiple agencies, organizations (Government and Non-Governmental), individuals, farmers, local bodies, Joint Forest Management Committees, Women Self-Help Groups, private institutions, academia, business houses, schools, colleges, youth organizations, and media. The activity generated 9.26 lakh man-days of green employment.

22. It is respectfully submitted that the Green Tamil Nadu Mission has been converged with MGNREGA (G.O. No. 153, Rural Development and Panchayat Raj Department - Enclosed), whereby raising, planting, and maintenance of seedlings is carried out through local community involvement. During 2024–25, 33.23 lakh seedlings are being raised in 310 nurseries owned by the Forest and Rural Development and Panchayat Raj Departments across 36 Districts under this initiative.

23. It is respectfully submitted that under the Rashtriya Krishi Vikasa Yojana (RKVY) during 2024–25, 14.5 lakh seedlings were raised under the Agroforestry Scheme

Personal Assistant,
O/o. Principal Chief Conservator of Forests,
Guindy-Velachery Main Road,
Near Kannigapuram Check Post,
Guindy, Chennai - 600 032.

Principal Chief Conservator of Forests,
(Head of Forest Force),
Chennai-32.

and handed over to the Department of Agriculture, Farmers Welfare Department for planting in farmlands.

24. It is respectfully submitted that the scheme for "Creation of Maragatha Pooncholai (Emerald Flower Garden) (Village Woodlots) in 100 Villages" was announced in 2022–23 (G.O. Ms. No. 146, Environment, Climate Change and Forests, (FR-6) Department, dated 24-08-2022 - Enclosed) to reduce dependency of the local community on forests for timber, fuelwood, and fodder. Phase-1 sanctioned 45 Pooncholai (Flora Garden) and Phase-2 sanctioned 38, of which 75 have been inaugurated by the Honourable Chief Minister of Tamil Nadu on 14-08-2024 across 29 Districts. Each Pooncholai (Flora Garden) covers 1 hectare with fencing, entrance gate, semi-permanent visitors' shed, walking pathways, borewell, benches, and other basic amenities. A total of 51,875 native seedlings of timber, fuelwood, fruiting, and fodder species were planted in 83 Pooncholai. The State Government has sanctioned 17 more Pooncholai on 06-03-2025.

25. It is respectfully submitted that the achievement in planting by various stakeholders from 2022–23 to 2024–25 is as follows:

Sl. No.	Year	Seedlings planted (Nos. in crore)
1.	2022-23	3.14
2.	2023-24	4.72
3.	2024-25	3.00
	Total	**10.86**

26. It is respectfully submitted that as per the District Annual Action Plan (DAAP) 2025–26, about 3.71 crore seedlings will be planted by various Government agencies, Non-Governmental Organizations, and institutions. The Total Action Plan for 2025–26 targets 12.67 crore seedlings, with the Tamil Nadu Forest Department contributing 1.52 crore seedlings.

Personal Assistant,
O/o. Principal Chief Conservator of Forests,
Guindy-Velachery Main Road,
Near Kannigapuram Check Post,
Guindy, Chennai - 600 032.

Principal Chief Conservator of Forests,
(Head of Forest Force),
Chennai-32.

27 . It is respectfully submitted that the factual position stated herein is placed before the Hon'ble Tribunal for kind information and consideration, with the assurance that the State continues to earnestly implement all measures for forest conservation, afforestation, and sustainable development in Tamil Nadu.

Principal Chief Conservator of Forests,
(Head of Forest Force),
Chennai-32.

Solemnly affirmed at Chennai on this the day of 16th September, 2025 and signed his name in my presence.

Before Me

Personal Assistant,
O/o. Principal Chief Conservator of Forests,
Guindy-Velachery Main Road,
Near Kannigapuram Check Post,
Guindy, Chennai - 600 032.

ANNEXURE 1

Japan International Cooperation Agency

Mr. I Anwardeen, IFS, APCCF&CPD
Project Management Unit
Tamil Nadu Forest Department, Government of Tamil Nadu

12/12/24
EV-2024-249

Subject: Draft Ex-Post Evaluation Report for "Tamil Nadu Biodiversity Conservation and Greening Project"（L/A No.ID-P214）

Dear Sir/Madam ,

Firstly, I thank you for your kind cooperation with our ex-post evaluation activity for the captioned project.

We are sending you herewith the draft ex-post evaluation report and rating of the project as attached. The evaluation report and rating will be open to the public in the second quarter of next year via the JICA webpage.

Please kindly review the contents of the draft report and send us your comments in English, using Attachment 4 if any, by Dec 25, 2024.If any comment or notice is not submitted by the said date, we will set this draft report as the final version.

We appreciate your kind understanding and cooperation and hope that the evaluation report will be of your help.

Very truly yours,

Michino YAMAGUCHI
Director
Evaluation Division 1, Evaluation Department
Japan International Cooperation Agency (JICA)

CC:
Chief Representative, JICA India office
Director, South Asia Division 1,South Asia Department, JICA

Attachment 1: Result of the rating
Attachment 2: Draft Evaluation Report
Attachment 3: Rating Method
Attachment 4: Comment and Reason on Draft Ex-Post Evaluation Report

Attachment 1

Result of Rating for:
"Tamil Nadu Biodiversity Conservation and Greening Project"

Item	Rating
Relevance and Coherence	Very High
Effectiveness and Impact	Very High
Efficiency	Very High
Sustainability	Very High
Overall Rating	**Highly Satisfactory**

*Explanation of Rating for Ex-Post Evaluations

JICA assigns four levels of rating to projects, "A" (highly satisfactory), "B" (satisfactory), "C" (partially satisfactory), and "D" (unsatisfactory). In assigning ratings, projects are evaluated individually on their (1) relevance and coherence, (2) effectiveness and impact, (3) efficiency, and (4) sustainability and assigned four levels of sub-ratings as ④ (very high) ③ (high), ② (moderately low), and ① (low).
Not only do the ratings express the evaluation results in an easily intelligible manner, but they are also devices that all parties involved can understand and use to make improvements which are based on the development projects' quantitative evaluations and other evaluation results, including in the process by which those results were achieved.

Republic of India

FY2023 Ex-Post Evaluation Report of

Japanese ODA Loan Project

"Tamil Nadu Biodiversity Conservation and Greening Project"

External Evaluator: Yumiko Onishi, IC Net Limited

0. Summary

This project was implemented in Tamil Nadu in southern India, with the objective to conserve biodiversity by strengthening the management of protected areas, planting trees outside of forest areas, improving livelihoods, and enhancing the operational capacity of the forest department thereby contributing to environmental conservation and harmonized socio-economic development. The project is evaluated very high on relevance and coherence, efficiency, effectiveness and impact, and sustainability.

Regarding the relevance and coherence, the project was aligned with the policies and development needs of both the Indian and Tamil Nadu governments from the time of project appraisal to that of the ex-post evaluation. It addressed various development needs identified during the appraisal and contributed to resolving them. The project's design and implementation were adjusted to create synergies with previous and subsequent projects from the project planning stage, which is highly commendable. Owing to its collaboration with other government schemes and organizations, the project has prompted the formulation and issuance of multiple new policies, schemes, and government directives in the country. Regarding efficiency, the project was implemented largely as planned, except for a few deletions or modifications of its scope, and both the project cost and duration remained within the original plan. Effectiveness and impact generally achieved the quantitative targets, while several unexpected impacts were identified. Notably, the executing agency's focus on building mutual trust with local community organizations is a key lesson from the project. Sustainability is also ensured, with organizational structure, technical capacity, and budget in place for continuing similar activities in the future. No significant risks that could undermine the project effects were identified.

In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description

Project location

Releasing hatched sea turtles (Photo by the external evaluator)

1.1 Background

Tamil Nadu is home to the Western Ghats mountain range and is one of the states in India with rich biodiversity. The state has 41 protected areas[1] and 553 species of endemic flora and fauna, with approximately one-third of the seed plant species found in India. The state also has diverse wild animals including 187 species of mammals, 177 reptiles, 76 amphibians, and 454 birds. In addition to tigers and elephants, endangered species such as the Nilgiri Tahr, an endemic ungulate, also have their habitat in the state. However, during the appraisal of the project in 2011, 230 species faced the threat of extinction due to habitat loss and degradation, the expansion of invasive alien species, wildfires, and poaching. Moreover, the reduction of habitats in the protected areas led to wildlife, such as tigers and elephants, encroaching on human settlements, resulting in numerous reports of human-wildlife conflict.

In 2008, the forest cover in Tamil Nadu was 21.8%,[2] falling short of the national goal of 33% set by India's *National Forest Policy* (revised in 1988). This highlighted the need for accelerated efforts to improve the forest cover. Moreover, in recent years, the demand for timber as a construction material and fuel has increased owing to rapid population growth. However, the state's timber supply capacity was not keeping pace, causing 31% of the necessary timber to be imported from outside the state or country in 2008.[3] On the other hand, there is a significant amount of fallow land outside the forests owned by people such as farmers (comprising 18% of the land area in the state). By implementing afforestation activities on the fallow land, it was anticipated that forest cover could be improved while increasing timber production.

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[1] Tamil Nadu Biodiversity Board. (https://tnbb.tn.gov.in/tn-wild.php#:~:text=The%20Protected%20Areas%20in%20the,(Protection)%20Act%2C%201972.) Accessed on August 27, 2024.

[2] Materials provided by JICA.

[3] Materials provided by JICA.

1.2 Project Outline

The objective of this project is to strengthen biodiversity conservation by improving ecosystem and the management capacity as well as undertaking tree planting outside the recorded forest areas, thereby contributing to environmental conservation and harmonized socio-economic development of Tamil Nadu.

<ODA Loan Project>

Loan Approved Amount / Disbursed Amount	8,829 million yen / 7,878 million yen	
Exchange of Notes Date / Loan Agreement Signing Date	February 2011 / February 2011	
Terms and Conditions	Interest Rate	0.65%
	Repayment Period (Grace Period	40 years 10 years)
	Conditions for Procurement	General untied
Borrower / Executing Agency	The President of India / Tamil Nadu Forest Department	
Project Completion	March 2019	
Target Area	Tamil Nadu State in southern India	
Main Contractor(s) (Over 1 billion yen)	-	
Main Consultant(s) (Over 100 million yen)	-	
Related Studies (Feasibility Studies, etc.)	The preparatory survey on Tamil Nadu Biodiversity Conservation and Greening Project (September 2010)	
Related Projects	<Japanese ODA loan> Tamil Nadu Afforestation Project (February 1997) Tamil Nadu Afforestation Project II (March 2005) Tamil Nadu Biodiversity Conservation and Greening Project for Climate Change Response (March 2022)	

	<Technical cooperation> Project for Capacity Building of State Forest Training Institute and Central Academy for State Forest Service (2009–2014) <Other agencies> World Bank: Biodiversity Conservation and Rural Livelihood Improvement Project (2011–2018) Global Environment Facility: Conservation and Sustainable Use of the Gulf of Mannar Biosphere Reserve's Coastal Biodiversity (1998–2008)

2. Outline of the Evaluation Study

2.1 External Evaluator

Yumiko Onishi, IC Net Limited

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: December 2023–February 2025

Duration of the Field Study: February 20–March 12 and July 1–18, 2024

3. Results of the Evaluation (Overall Rating: A[4])

3.1 Relevance/Coherence (Rating: ④[5])

3.1.1. Relevance (Rating: ④)

3.1.1.1 Consistency with the Development Plan of India

From the time of the appraisal to that of the ex-post evaluation of the project, forest regeneration and biodiversity conservation have been one of the key national targets set by the Government of India. During the appraisal of the project, the national five-year plan (*Eleventh Five-Year Plan* from April 2007 to March 2012) focused on the restoration of degraded forests, promoting activities related to joint forest management and management on wildlife sanctuaries, and reducing human-wildlife conflict. In recent years, the importance of biodiversity conservation and climate change measures increased significantly, leading to the introduction of several related policies and programs including the *National Wildlife Action Plan* (2017‐2031) in 2017.

The Tamil Nadu government is actively engaged in developing concrete plans and initiatives for habitat improvement and climate change mitigation, establishing its position as a model in the

[4] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[5] ④: Very High, ③: High, ②: Moderately Low, ①: Low

country. In its *State Forest Policy 2018*, the state government identifies climate change mitigation through resilient and sustainable forests as one of its top priorities, committing itself to strengthening the state forest department's capacity to achieve this. Furthermore, the *State Climate Change Action Plan Draft 2.0* (2019) outlines measures for climate change adaptation, including increasing forest cover, enhancing biodiversity conservation, and improving the livelihoods of communities dependent on forest resources, along with building capacity related to climate change.

The state government established the *Tamil Nadu Policy on Invasive Alien Species and Ecological Restoration of Habitats* (2022) to continue and promote similar activities, recognizing that the removal of invasive alien species through the project is effective for biodiversity conservation. Moreover, it launched the *Green Tamil Nadu Mission*, a program focused on climate change mitigation. Furthermore, the sea turtle conservation activities initiated by the project led to significant measures, such as a fishing ban within five nautical miles of the coastline during the nesting season (2015) and a government order to turn off resort lights at night to prevent hatchling sea turtles from being misled by artificial light (2018).

Thus, forest regeneration, biodiversity, and climate change remain key focus areas for both the Indian and Tamil Nadu governments, confirming the consistency with the project aiming for biodiversity conservation. The way in which the project raised awareness on the importance of biodiversity conservation is particularly noteworthy, leading to the development of several new policies, schemes, and government orders. This aspect is highly commendable and offers valuable insights for other projects.

3.1.1.2 Consistency with the Development Needs of India

As described in "1.1 Background," Tamil Nadu possesses diverse ecosystems; however, its biodiversity has been threatened by factors such as invasive alien species, wildfires, and poaching. The Tamil Nadu Forest Department (TNFD) developed management plans for protected areas considering their unique characteristics, and the plans outline strategies to address various factors adversely impacting biodiversity. However, the budget for biodiversity conservation was not particularly sufficient, and strengthening effective and efficient management of protected areas required enhanced capacity through the acquisition of more specialized knowledge. Moreover, to conserve the biodiversity surrounding forest areas, it was essential to provide local communities with sustainable livelihoods and means of living in harmony with the natural environment such as ecotourism. This approach aimed to reduce impacts on ecosystems and promote sustainable forest management.

The project contributed to addressing various development challenges. However, many of these challenges require continued effort. Table 1 summarizes the status of responses to development needs at the time of the ex-post evaluation.

Table 1: Development Needs at the Time of the Appraisal and Response Status

Development needs identified at the time of the project appraisal	Current status and action taken by the project
Increase in forest cover: In 2008, the forest cover in Tamil Nadu was 21.8%. To meet the national target of 33%, afforestation outside forest areas was necessary.	Over the past decade, the green cover in Tamil Nadu expanded by 2,794 km²; however, the forest cover remains at 20%, indicating that further tree planting is necessary to meet the national target. Given the limited forest area in the state, it is essential to further expand the tree cultivation on private land (TCPL) initiatives implemented by the project. Details on achievement of TCPL are discussed in the Efficiency and Effectiveness sections.
Removal of invasive alien species: The habitat of invasive alien species (such as wattle and mesquite, which are not native to Tamil Nadu) has expanded, threatening the native species habitat.	Although invasive plants have been removed from 3,000 ha of land, these species have strong regenerative capabilities, necessitating continued efforts of removing them (maintenance activities). According to the TNFD, restoring the state's plant ecosystem is estimated to take 20 years. The department further estimates that removal of invasive alien species is still required on 318,000 ha, indicating that the target area must be gradually expanded. In the Tamil Nadu Biodiversity Conservation and Greening Project for Climate Change Response, which is Phase 2 of the project, there are plans to develop standard operating procedures for removing invasive alien species.
Protection of marine ecosystems: The presence of endangered species such as dugongs and sea turtles required the promotion of conservation activities.	Conservation activities for sea turtles and dugongs have been implemented, establishing a foundation for marine ecosystem protection. These efforts have been pilot initiatives, and it is necessary to expand the scale of these activities through Phase 2 of the project and other government programs.
Mitigation of human-wildlife conflict: Owing to habitat loss, tigers and elephants frequently appeared in human settlements, increasing the reports of conflict-related incidents.	To mitigate human-wildlife conflict, various measures have been implemented through the project. Meanwhile, animals such as elephants are highly adaptable and may learn to circumvent the strategies introduced by the project in the future. Therefore, adaptive management[6] is essential for effective wildlife conservation.
Strengthening management plans for protected areas: The development of management plans based on specialized knowledge has been essential for efficient and effective management of protected areas.	Management plans for protected areas were developed based on scientific evidence. Through the implementation of the project, TNFD staff gained knowledge and experience in preparing management plans. These plans are updated every five years.
Promotion of ecotourism: The promotion of ecotourism was expected to provide local communities around forests and protected areas with	Ecotourism is being operated and managed by the community organizations at 25 target sites. This initiative aims to help local people understand the value of the natural environment while providing them with livelihood opportunities. In the state, there is a plan to develop an

[6] Management methods used for the conservation of wildlife and ecosystems. It means adapting management methods according to the results in an environment that is constantly changing and characterized by uncertainty.

livelihoods and means to live in harmony with the natural environment, thereby reducing adverse impacts on natural ecosystems.	ecotourism circuit connecting the sites developed through the project to attract visitors.

As stated above, there has been a continuous need for biodiversity conservation and forest expansion from the time of the project appraisal to the ex-post evaluation, indicating that the project is consistent with the development needs of India and Tamil Nadu.

3.1.1.3 Appropriateness of the Project Plan and Approach

The project clearly focused on biodiversity conservation, as indicated in its name. Through interviews with the TNFD, it was found that all aspects of the project design were meticulously considered to contribute ultimately to biodiversity conservation. Various approaches were examined, referring to existing research findings and best practices regarding the removal of invasive alien species and mitigation of human-wildlife conflict. Moreover, given the project budget and timeline, the project plan and scope were made in such a way as to maximize impact with the available resources.

In place of limited forest areas for increasing the forest cover, the project implemented tree cultivation on private land (TCPL), which was a first for the forest projects funded by Japanese ODA loans in India. Before the project commenced, TNFD had a two-year pilot period funded by the state government to explore the design of this component.

While the primary beneficiaries of the project were the local communities around protected areas, they included many Scheduled Tribes who are particularly vulnerable to being left behind. Therefore, when formulating the project, careful consideration was given to their opportunity to participate in the project, needs, and equitable economic benefits. The project was designed with attention to the needs and economic benefits of the beneficiaries, including measures to mitigate human-wildlife conflict and ecotourism management. At the time of the project appraisal, discussions were held with local communities to explain the project objectives and confirm local development needs. Of local community organizations created in earlier projects (TAP I and II),[7] close attention was paid to extend assistance to Scheduled Tribes and other communities who had not received development assistance from other government agencies. As a result of this careful attention, it is fair to say that the project effects were equitably delivered to the vulnerable populations as well.

Regarding the implementation arrangements, changes were made from TAP I and II, establishing a Project Management Unit (PMU) rather than the project being directly managed by

[7] TAP I: Tamil Nadu Afforestation Project (February 1997–May 2005); TAP II: Tamil Nadu Afforestation Project II (March 2005–March 2013). Both were implemented by Japanese ODA loans.

the TNFD.[8] The PMU was established under the TNFD but matters related to routine activities were decided and processed by the PMU. While the implementation structure was already established in the previous projects, stakeholders noted that introducing the PMU made financial decisions and flows smoother. In the case of government budgets, funds are released in phases as they become available; however, with the PMU, a certain amount could be released at once based on the annual plan of operation. This allowed unutilized funds to be deposited in a savings account to earn interest, which was then used for TCPL incentive payments. The decision to employ the new structure was made after extensive discussions with JICA and became one of the factors contributing to smooth project implementation.

During the project implementation, some scopes were deleted or modified. All such decisions were made after thorough discussions between the executing agency and JICA. Descriptions of the deleted or modified portions of the scope are given in "3.2.1 Outputs." The changes were appropriate in light of the project objective, and they followed appropriate decision-making procedures.

Additionally, lessons learned from similar previous projects indicated the need for guidelines that clearly outline the scale, criteria for site selection, operational standards for forest management committees, and accountability structures to facilitate smooth implementation of afforestation and forest management by community organizations. The project created necessary guidelines and manuals as needed to implement protected area management and ecotourism through community organizations.

Based on the above, it can be concluded that the plans and approaches made during the project appraisal were appropriate.

3.1.2 Coherence (Rating: ③)

3.1.2.1 Consistency with Japan's ODA Policy

In May 2006, the Japanese government established a Country Assistance Program for India, prioritizing "improving poverty and environmental issues." The program explicitly outlined the intention to support biodiversity conservation and the forestry sector, focusing on soil degradation, erosion prevention, and enhancing people's livelihoods. In response, JICA designated "support for environmental and climate change measures" as one of its key areas of assistance for conservation of natural resources and its sustainable use, aiming to restore degraded forests to improve both the quantity and quality of forests, prevent soil degradation, maintain soil and water conservation functions, and support biodiversity conservation. The project matched these policies and was consistent with Japan's ODA policies at the time of the project appraisal.

3.1.2.2 Internal Coherence

[8] The advantage of introducing the PMU is explained in "3.2.1. Project Outputs."

This project is the third Japanese ODA loan project in the forestry sector in Tamil Nadu. It was designed to address biodiversity conservation by building on the achievements of previous afforestation and livelihood improvement efforts, aiming for synergies with earlier projects. TAP II laid the groundwork for biodiversity conservation through activities such as afforestation of degraded forest areas, restoring vegetation, and improving the livelihoods of communities dependent on forests. The project was planned during the implementation of TAP II, expanding biodiversity conservation activities to amplify the outcomes of the previous projects. For example, while the previous projects focused on restoring elephant habitat through afforestation of degraded lands, this project emphasized further habitat restoration and mitigating human-elephant conflict.

Moreover, trust between the TNFD and the local communities gradually developed through the activities of the previous projects. TNFD staff reported that adding this project's activities onto such foundation of mutual trust made all activities much smoother.

In the subsequent project (Phase 2) planned during the implementation of this project, methods for removing invasive alien species and conservation activities for sea turtles and dugongs developed in the project are being expanded.

Restoring forests and ecosystems takes time. The project was mindful of its own design following the previous project and the formation of a successive project, fostering collaboration between them. The continuous support that the TNFD provided to the communities and the environment led to significant results, indicating a high degree of internal coherence.

3.1.2.3 External Coherence

The project aligns with several Sustainable Development Goals (SDGs), specifically Goal 14 "Life below Water," Goal 15 "Life on Land," and Goal 13 "Climate Action."

The project planned to collaborate with local NGOs for community development and livelihood improvement activities. Many NGOs actively participated in the project; some were contracted to create micro-plans for the target communities. Some participated in the project on the basis of their track record built upon locally-based expertise. Notably, the Student Sea Turtle Conservation Network (SSTCN), which has been protecting sea turtles since 1987 along the Chennai beach, contributed its expertise to the project. The project used the knowledge and experience of such organizations, having volunteers from NGOs and the TNFD collaborate in collecting turtle eggs from nesting sites and transferring them to hatcheries. At the onset of project activities, the SSTCN acted as a liaison to facilitate communication between the TNFD and the coastal communities near the nesting sites. The SSTCN reported that partnering with a government agency increased the visibility of conservation efforts and provided a sense of security for nighttime egg collection activities.

Moreover, there were synergy effects with other government projects for biodiversity

conservation, such as Project Tiger, Project Elephant, and the Integrated Development of Wildlife Habitat (IDWH).[9] For instance, funding from the IDWH was allocated for ongoing sea turtle conservation activities between the end of the project and the start of Phase 2, and vocational training was provided to residents near bird sanctuaries.

Furthermore, the TNFD leveraged Corporate Social Responsibility (CSR) funds from private companies[10] for expanding eco-tourism sites and community development. Many mining and infrastructure development companies in Tamil Nadu actively engage in CSR initiatives focused on environmental protection. The TNFD proactively approached these companies to ensure that the communities where they operate benefit from CSR funding. As a result, private companies contributed to the construction of additional facilities at eco-tourism sites and watchtowers in a protected area.

In summary, through collaboration with NGOs and other governmental schemes, and the use of CSR resources, the project achieved concrete outcomes regarding collaboration and coordination during its implementation.

The project was consistent with Japan's ODA policies at the time of the project appraisal, as well as with the policies and development goals of both the Indian and Tamil Nadu governments from the time of the appraisal to the ex-post evaluation. Notably, the project prompted the formulation of related policies and schemes at the state government level, which may provide valuable insights for other projects. The project plan and approach involved thorough consideration of multiple options from various perspectives, which were then reflected in the project design. Changes made during implementation were based on the on-the-ground situation and were properly evaluated through appropriate processes. The project effectively addressed various development needs identified during its appraisal, contributing to overcoming development challenges. As there are synergies with previous and subsequent projects, as well as collaboration with other government programs, agencies, and NGOs, the project's relevance and coherence are very high.

3.2 Efficiency (Rating: ④)

3.2.1 Project Outputs

The planned and actual outputs are shown at the end of the report in "Comparison of the Original and Actual Scope of the Project" or in Attachment 1. Most of the project scope was implemented as planned. However, there were deletions and changes regarding the monitoring of climate change impacts, the installation of electric fences, and the TCPL initiative.

First, the work of monitoring climate change impacts was tendered and an external resource

[9] A scheme by the Government of India for mitigating human-wildlife conflict. This scheme also focuses on improving the livelihood of communities living around protected areas.

[10] In India, under the Companies Act, companies with a certain level of revenue, profit, or assets are required to allocate 2% of their net profit to CSR.

organization was selected. However, the estimated costs significantly exceeded the budget, and the proposed two-phase monitoring plan would not have been completed within the project timeline. After discussions between the TNFD and JICA, it was decided to delete the activity from the project's scope because it was not a core portion of the scope. The scope aimed at establishing long-term protocols and did not affect the overall effectiveness of the project.

The electric fences, which were to be constructed to protect communities and their agricultural lands from wildlife intrusion, were also deleted from the scope. At the beginning of the project, frequent malfunctions, damages, and accidents raised concerns from the target communities. The decision to drop the scope was reached after discussions between the PMU and JICA.

As for the TCPL, it underwent changes due to the following circumstances: Initially, afforestation was to be done in private fallow land by planting a mix of "short rotation species" which has short duration til harvest and "long rotation species" with longer duration til harvest at a ratio of approximately 3:7 among 5,000 farmers in the villages.[11] However, upon starting the activities, it became evident that many interested participants desired only the short rotation species. To promote the planting of long rotation species, households wishing to plant only short rotation species were excluded, which led to a decrease in the expected number of participating households. As a result, the number of target villages was increased to 7,315. Furthermore, by using the remaining balance of the Japanese ODA loan toward the end of the project, an additional 465 villages were included, resulting in an increase of 8,600 hectares in the planted area compared to the original plan.

As noted in section "3.1.1.3 Appropriateness of Project Plan and Approach," these deletions and changes in scope were justified and made through appropriate procedures.

3.2.2 Project Inputs

3.2.2.1 Project Cost

Table 2 indicates the planned and actual project costs.

Table 2: Planned and Actual Project Costs

	Total project cost	Japanese ODA loan
Planned	JPY 12,899 million (Foreign currency JPY 415 million, local currency JPY 12,484 million)	JPY 8,829 million
Actual	JPY 9,255 million (Foreign currency JPY 42 million, local currency JPY 9,213 million)	JPY 7,878 million

[11] To increase the tree cover, the project gave priority to planting of long rotation species.

The total project cost is 72% of the plan, with the ODA loan portion at 89%. Thus, the project cost was within the planned amount. The actual expenditure for the major components is as follows:

- Biodiversity conservation activities: 90% of the plan
- TCPL: 142%
- Institutional capacity development of TNFD:[12] 149%
- Consulting services: 90%

Because of the appreciation of the yen and reductions in the administrative cost, the total project cost was less than initially anticipated at the time of the project appraisal. Regarding TCPL, the actual cost exceeded the planned one because additional villages were included by using the remaining balance of the ODA loan at the end of the project, as explained in the Outputs section. Moreover, the institutional capacity development exceeded the plan, as the increase in TCPL's target villages led to more training for participating households, resulting in a higher number of TNFD staff and local people participating in various training programs.

3.2.2.2 Project Period

At the time of the project appraisal, the implementation period of the project was to be from February 2011 (signing of the Loan Agreement) to March 2019, totaling 8 years and 2 months (98 months), with the completion of biodiversity activities marking the end of the project. At the beginning of the project, there was a delay of about 8 months due to the establishment of the Project Management Unit (PMU) and the hiring of staff. However, any delay was eliminated by adjustments made subsequently that included revising the activities planned for the first year to the following years, speeding up approval processes, and allocating additional personnel. All biodiversity conservation activities were completed by March 2019; however, as there were unused funds in the ODA loan at that point, based on discussions with JICA, TCPL activities were expanded, which continued until December 2020. Although TCPL continued until December 2020, it is important to note that: a) the definition of project completion at the time of the ex-ante evaluation was "completion of biodiversity activities," and b) the main objective of the project was the conservation of biodiversity. Therefore, based on the definition at the time of the ex-ante evaluation, the project period, when comparing the planned one with the actual, is confirmed as being from February 2011 (signing of Loan Agreement) to March 2019 (8 years and 2 months, 98 months), which was within the plan.

[12] Inclusive of the administrative cost

3.2.3 Results of Calculations for Internal Rates of Return

In this project, only the Economic Internal Rate of Return (EIRR) was calculated. Based on the assumptions made at the time of the project appraisal, EIRR at the time of the ex-post evaluation was recalculated. The costs are project expenses (excluding taxes), and maintenance costs. The benefits come from timber revenue from TCPL. The project life was calculated to be 40 years. The EIRR at the time of the appraisal was 10.8%, while it is 11.5% at the time of the ex-post evaluation. However, 11.5% was recalculated based on the data obtained for 143,000 ha of areas under TCPL. As the actual area for TCPL, including the one implemented using the remaining balance of the ODA loan, amounts to 151,600 ha, EIRR at the time of ex-post evaluation would be actually higher than 11.5% when recalculated including the additional 8,600 ha. However, detailed data for the additional 8,600 ha could not be confirmed at the time of the ex-post evaluation.

The project was implemented almost as planned, except for a few portions of the scope being deleted and modified. The decision to delete the installation of electric fences was a sensible change, considering the safety of the widely used electric fences at that time. The monitoring of climate change impacts was deemed not to be a major part of the scope of the project, leading to its deletion, as it could not be completed during the project term. Although the number of trees planted was reduced owing to prioritizing long-rotation species to maintain the target area, the actual area achieved was as planned. Moreover, by using the remaining balance of the ODA loan to add new areas at the time of project completion, the outputs exceeded the initial plan. Both the project costs and period were within the plan. Therefore, efficiency of the project is very high.

3.3 Effectiveness and Impacts[13] (Rating: ④)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

Table 3 presents the indicators defined at the time of the project appraisal, and their baseline, target, and actual figures.

Table 3: Operation and Effect Indicators

Indicator	Baseline	Target (2 years after completion)	Actual (2021, 2 years after completion)
a. Number of protected areas intervened by the project		20	20
b. Number of community organizations established		88	88

[13] When providing the sub-rating, Effectiveness and Impacts are to be considered together.

under the project			
c. Number of small and marginal farmers who planted trees outside the recorded forest areas*		40,000	127,329
d. Plantation area outside the recorded forest areas (ha)		143,000	151,600
e. Survival rate of trees planted outside the recorded forest areas (%) **		70	72
f. Number of TNFD staff trained		5,740	5,423
g. Livelihood improvement (INR/year)	34,031		110,182

Source: Materials provided by JICA and the executing agency
* Although the term "farmers" is used, non-farming households also participated in TCPL and are included in the actual figure.
** Both the target and actual figures are for two years after the planting.

a. Number of protected areas intervened by the project: As planned, the project targeted 12 bird sanctuaries and 8 wildlife sanctuaries/national parks for activities such as habitat and ecosystem restoration, removal of invasive alien species, and construction of water reservoirs for wildlife, achieving its targets.

b. Number of community organizations established under the project: The target was achieved. A total of 33 Eco Development Committees (EDC), 30 Ecologically Sustainable Development Villages (ESD), and 25 Eco Tourism Management Committees (ETMC) were established. An overview of the various community organizations is provided in Table 6 in the Sustainability section. EDCs were registered based on the Joint Forest Management (JFM) guidelines, targeting communities around the protected areas. ESDs focused on villages surrounding reserve forests. As the entire village population was considered for an ESD, it was sometimes unnecessary to form new community organizations; in some cases, ESDs were created by branching off from the existing large Village Forest Committees (VFC). ETMCs were primarily established by self-help groups (SHG) under the EDC to manage eco-tourism. The project provided revolving funds for livelihood improvement to both EDCs and ESDs. Although no data are available based on the poverty rate defined by the Government of India, among members of the community organizations, 59% of households in EDCs and 72% in ESDs had a monthly income below INR 5,000 (approximately JPY 9,300). Moreover, most members belong to Scheduled Tribes, while the rest are from Scheduled Castes[14] or other economically backward groups.

c. Number of small and marginal farmers who planted trees outside the recorded forest areas and

[14] In the Constitution of India, it refers to the population of designated castes. Various preferential measures are provided in such sectors as education and employment for castes that were earlier considered "untouchables," in a similar manner to those for Scheduled Tribes.

d. plantation area outside the recorded forest areas: As mentioned in the Outputs section, the target exceeded in both the number of participating households and the planted area because of the expansion made possible by the remaining balance of the ODA loan.[15] Initially, it was difficult to gain understanding from people regarding long-rotation species owing to the long waiting period until harvest. When only long-rotation species were targeted, the number of participating households decreased, resulting in smaller areas. Therefore, by expanding the target villages, the project achieved far more participating households than planned. While TCPL initially aimed for mainly small farmers to participate, only 49% of the participants were actually small farmers.

e. Survival rate of trees planted outside the recorded forest areas: The target was set for the survival rate two years after planting. The actual rate was confirmed two years after planting in various privately owned lands where planting was implemented in a phased manner. Considering that Tamil Nadu's average rainfall is not particularly high, the survival rate target was ambitious; however, measures taken by beneficiaries, such as the introduction of drip irrigation, led to achieving a high survival rate.

f. Number of TNFD staff trained: Training was conducted in cooperation with the state's forest training institutes and specialized agencies. The training covered a wide range of topics including wetland management, management of invasive alien species, response to wildlife-related incidents, and Geographic Information System (GIS). The project nearly met its target in this indicator.

g. Livelihood improvement: Household surveys were conducted by third parties at the start, mid-term, and end of the project in the 63 villages where EDCs and ESDs were formed. The baseline figure is from the beginning of the project in 2012, and the actual figure was taken from end-line data around 2018. Data from four villages, where average household income could be confirmed in the reports, were used. While no specific target was set, considering that the inflation rate during this period was approximately 36%, the fact that average income tripled from the baseline is a positive change. The qualitative effects of improving people's livelihood is also detailed in the next section.

3.3.1.2 Qualitative Effects (Other Effects)

The expected qualitative effects at the time of the project appraisal included environmental conservation (habitats for birds, dugongs, and sea turtles; removal of invasive alien species; soil and water conservation; and measures against wildfires and poaching), livelihood improvement, and enhancing social and economic capacities of women.

Based on interviews with the executing agency and the beneficiaries, field surveys, and human

[15] Excluding the additional TCPL, the number of the participating households is 101,123, and the afforested area is 143,000 ha.

well-being survey[16] conducted during the ex-post evaluation, it can be concluded that the qualitative effects and impacts of the project were in line with the expectations from the project appraisal. Furthermore, as shown in Figure 1, the project aimed to improve the natural environment through interventions in both the natural and human realms. The environmental improvements resulting from the restoration and enhancement of wildlife ecosystems and habitats can be attributed to the project activities, which triggered various changes in both the natural and human worlds. In the natural world, examples include the following: a) conservation of endangered species, and b) regeneration of natural forests through the removal of invasive alien species. Moreover, as indicated in Column 1, the project caused changes in the human world.

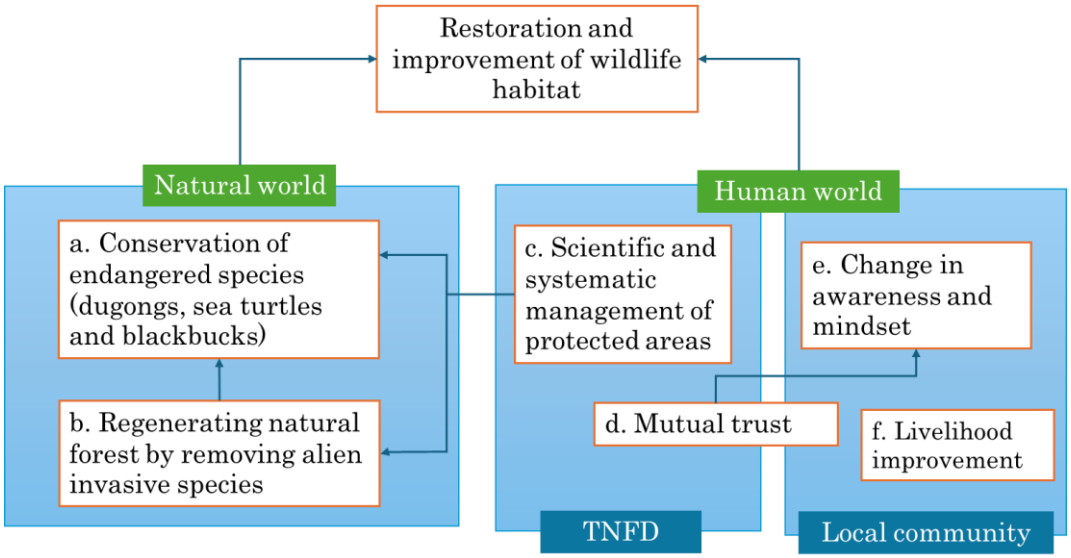


Figure 1: Qualitative Effects of the Project

Regarding b), the project gradually removed invasive species such as mesquite (*prosopis*) originally brought from South America and a type of introduced acacia known as wattle. As a result, the regeneration of native forests and grasses is progressing. In the Kodaikanal Wildlife Sanctuary, 100 ha of wattle was removed by the project. Prior to the British colonization, the area had mountain forests known as sholas, which supported grasses preferred by elephants. In the areas where wattle was removed, native species, including grasses preferred by the elephants, are

[16] Rather than evaluating the project solely based on the achievement of the indicators and targets set during the project appraisal, the survey's objective was to capture the positive and negative impacts on beneficiaries' lives from multiple perspectives. This included investigating and analyzing unintended secondary effects and long-term impacts that were not anticipated as project outcomes. During the first field survey, interviews were conducted with approximately 50 stakeholders including TNFD field officials, local communities and others from the representative project sites. From these, individuals and groups showing changes in personal lives and values due to the project's positive and negative impacts were identified for detailed analysis. Approximately 18 individuals were selected for the interviews, comprising 6 women and 12 men from six project sites, with ages ranging from their 20s to 60s.

gradually regenerating, and the elephants have been sighted more frequently in recent years. Moreover, as wattle had the effect of turning the soil acidic, the pH levels in the areas where it was removed have improved, as shown in Table 4.

Table 4: Changes in Soil pH Level in Kodaikanal Wildlife Sanctuary[17]

Fiscal year	pH level
2013-2014	3.29
2015-2016	4.82
2017-2018	5.20

Source: TNFD

Moreover, the regeneration of grasses preferred by the blackbuck (Indian antelope) led to an increase in herbivore populations and stabilization of their numbers in both Guindy National Park and the Point Calimere Wildlife Sanctuary, as reported by the TNFD field staff. Furthermore, invasive species such as *prosopis* tend to reduce the groundwater level, its removal allowed groundwater recharge, and the local residents reported improvements in water quality.

The effects on the human world benefited both the TNFD, the executing agency, and the local communities (see the right-hand side of Figure 1). For the TNFD, the benefits include capacity building, management of the protected areas based on established management plans, and scientific and systematic management of the protected areas informed by the knowledge and experience gained through the project (refer to "c." in Figure 1). Moreover, the positive relationship that TNFD gradually built with the communities over the years, including the previous projects (refer to "d." in Figure 1), can also be considered a benefit. During the external evaluator's visits to EDCs, both the EDCs and the TNFD stated that their relationship deepened through consultation with the community during the project appraisal, giving due consideration

Shola forest restored (left), blackbuck (right) (Photos by the external evaluator)

[17] Regarding the pH level, 7 is neutral, less than 7 is acidic, and above 7 is alkaline.

to the communities that had not received government support, as well as regular visits and timely implementation of activities by the TNFD.

Furthermore, there has been a noticeable change in awareness and values among the beneficiaries triggered by working with the TNFD (refer to “e.” in Figure 1). Specifically, in areas where there was little interaction with outsiders before the project, people reported gaining insights on mainstream education and job opportunities through regular contact with TNFD staff and visitors to the eco-tourism sites. They recognized the importance of nature conservation and became aware of the valuable natural resources surrounding them. Moreover, in the communities where child marriage was prevalent, some individuals learned from TNFD staff that marrying minors is undesirable and some expressed a desire to ensure their daughters pursue education, indicating a transformation in social values. In areas where eco-tourism was developed, community organizations manage the sites, providing employment opportunities for the locals. It contributed to improvements in their livelihoods (refer to “f.” in Figure 1). As the numbers of native plants and herbivores have increased, sightings of elephants and tigers have also risen, leading to an influx of visitors seeking eco-tourism experiences and contributing to local economic development. Additionally, microcredit was established using the revolving funds provided to EDCs and ESDs, helping people move away from high-interest loans for medical and educational expenses, thereby improving their living standards to a certain extent. Many shops and canteens at the eco-tourism sites are operated by women and SHGs. One woman running a canteen shared, “I previously had no opportunities to work outside the home, but working here has led to my economic and social independence.” Further examples of well-being surveys are detailed in Column 2. Moreover, in areas where elephant-proof trenches (EPT) were constructed, reports indicate that intrusions by elephants have been prevented, allowing for an expansion of cultivation land.

From the perspective of Leaving No One Behind, the project primarily targeted rural, remote areas such as forests and protected areas, which are inhabited by socio-economically vulnerable communities. No specific groups were excluded in the project areas, and the project effects were delivered to vulnerable populations as well.

Hatchery for the sea turtles (left), EPT (right) (Photos by the external evaluator)

The operational and effectiveness indicators were mostly achieved. Moreover, as seen in the qualitative effects, various activities contributed to environmental conservation in both the natural and human worlds. Therefore, it can be stated that the project has achieved its objectives more than planned.

3.3.2 Impacts

3.3.2.1 Intended Impacts

At the time of the project appraisal, the expected impacts included contributions to climate change mitigation (approximately 403,000 metric tons of CO_2 equivalent per year) and support for environmental conservation and balanced socio-economic development in the target area. First, regarding the CO_2 equivalent calculations, the detailed methods used during the appraisal were not available; therefore, recalculation was not done at the time of the ex-post evaluation. However, considering that the afforestation area under TCPL was implemented as planned and that the number of long-rotation tree species has exceeded initial expectations, it is fair to state that the target of approximately 403,000 tons of CO_2 equivalent per year has been largely achieved. Contributions to environmental conservation and balanced socio-economic development in the target area are explained in section "3.3.1.2 Qualitative Effects."

Column 1: Strengthening and Accelerating Sea Turtle Conservation Effort

Since the 1980s, the Students Sea Turtle Conservation Network (SSTCN) is an NGO that has been working to protect sea turtles in the coastal areas of Chennai. Prior to the project, the SSTCN was collecting eggs during the nesting season at night to prevent damage from local people and stray dogs, but it struggled to gain the community's understanding. As the project started, the collaboration with the TNFD enabled the SSTCN to expand awareness activities for local people and fishermen, and strengthen the hatcheries. The fact that it operated with the backing of the government helped communicate its legitimacy to the local people, increasing their understanding of conservation efforts. As a result, the number of volunteers collecting eggs increased, raising the egg recovery rate.

Mr. Manoharan from Point Calimere in Nagapattinam District, who had been protecting sea turtles on his own, found it difficult to gain the understanding of his fellow fishermen for many years. However, through his continued volunteer work in the project, his long-standing efforts were recognized, and he was publicly acknowledged by government officials at an event. This led his fellow fishermen to realize the true importance of protecting sea turtles.

In both the SSTCN and Mr. Manoharan's cases, the project prompted local people and fishermen to understand that sea turtles are at the risk of extinction, leading to a significant shift in awareness toward conservation. In the past, when people found eggs, they might have thrown them, but now they are more likely to inform NGO members. Moreover, when sea turtles accidentally get caught in fishing nets, fishermen were accustomed to killing them to protect their nets; now, they prioritize rescuing and releasing the turtles, even at the risk of losing their nets.

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

The project was categorized as Category B according to the *Japan Bank for International Cooperation Confirmation of Environmental and Social Consideration* (April 2002), as it was determined that the potential adverse impacts on the environment were not significant, considering the characteristics of the sector, project, and the target areas. Moreover, the environmental impact assessment report related to the project was not mandated by the Government of India. At the time of the project appraisal, it was assumed that adverse impacts on the natural environment would be minimal.

During the project implementation, management plans for the protected areas were developed to ensure that activities were conducted with due consideration to minimize ecological impact. For example, in removing *prosopis*, different areas were targeted in a phased manner to avoid threatening the habitats of deer, which often use bushes of *prosopis* for shade. The tree species selected for planting under TCPL primarily included native species such as teak and neem.

Furthermore, according to the TNFD, the use of pesticides and fertilizers is prohibited in the protected areas; thus, they were not used in the project activities.

2) Resettlement and Land Acquisition

This project involved afforestation on private lands owned by farmers. As the land ownership remained with the original owners, land acquisition or resettlement did not arise.

3) Gender Equality

At the time of the project appraisal, it was planned to implement gender-sensitive, community-based management of protected areas, afforestation activities, and livelihood improvement initiatives through EDCs, SHGs, and other community organizations. Given the differing roles of men and women in activities such as afforestation and eco-tourism, the project aimed to respect women's voices and incorporate a gender perspective. In practice, plans and activities were developed with women's empowerment in mind. For instance, during the formulation of micro-plans by the EDC, considerations were made to identify specific challenges faced by women, and vocational training were arranged in such a way to ensure women's participation. According to the state forest policy, women must comprise half of the members and one-third of the executive committee members in community organizations. An impact assessment[18] conducted in 2022 indicated that women accounted for an average of 44% of the members and 36% of the executive committee members in the community organizations involved in the project.

Column 2: Improvement of Women's Social Status and Economic Independence

Roja, the leader of the MGR Nagar ETMC, has served as the president since the committee was formed in the project. Growing up in a conservative household, she married at age 18 and was extremely shy, unable to speak with strangers or talk in front of large groups. Although she dropped out of school after the 8th grade, because she was good at math, she was asked by women in her locality to become the president of their ETMC. As she overcame the challenge of speaking in public and gradually began to lead the group, she realized she had leadership abilities. Previously a housewife with no work experience outside the home, Roja now earns her own income through a cooking equipment rental business. Moreover, she acts as a liaison and negotiator with various government agencies as a community leader.

4) Marginalized People

As previously mentioned, the project focused on villages predominantly inhabited by Scheduled

[18] JICA and All State Financial Services Private Limited. Impact Assessment Study of JICA Assisted Forestry Project in the State of Tamil Nadu. (2022).

Tribes, which have high poverty rates and depend heavily on forest resources. In regions with a significant Scheduled Tribe population, consultation meetings with the people prior to the project were conducted to ensure that their livelihoods and culture would not be negatively impacted. During the selection of target villages, care was taken to consider the needs of vulnerable population and communities, leading to the establishment of independent community organizations separate from the existing VFCs. This allowed for tailored support that addressed the unique needs of each village based on their social and cultural backgrounds. In the target villages, micro-plans were made with consideration for each community's social and cultural context to guide community development.

Furthermore, while the previous projects benefited communities within the forest areas, this project targeted communities surrounding protected areas and forests. Unlike earlier initiatives that followed a joint forest management approach, the project involved the entire community in directly managing natural resources, and there was less reliance on the TNFD for profit-sharing. To promote biodiversity conservation while ensuring that nearby communities were not overlooked regarding development, the project provided revolving funds to community organizations as part of its strategy.

As stated in “3.1.1.3 Appropriateness of Project Plan and Approach” as a result of considerations such as providing support primarily to communities that have not previously received development assistance from other government agencies, the project's benefits have been fairly extended to people who are often left behind, such as the Scheule Tribes. Furthermore, through interviews with such communities, it was confirmed that there were no negative impacts on their lives or culture because of the project.

5) Social Systems and Norms, People’s Well-being and Human Rights

In the ex-post evaluation, a well-being survey focusing on beneficiaries was conducted. The survey targeted 18 beneficiaries selected during the first field survey. When asked about changes in their subjective well-being before and after the project, all the respondents indicated positive change. When they were further asked about the factors contributing to this change, several unexpected effects were identified. These included the joy stemming from local people gradually understanding the importance of sea turtle conservation and the satisfaction derived from exercising leadership abilities and becoming important figures in their communities, in addition to the changes in awareness and values noted as qualitative effects.

The well-being survey brought to light various project impacts. As it is challenging to isolate other impacts, detailed insights from the survey are explained in "3.3.1.2 Qualitative Effects" and in the columns.

Regarding effectiveness of the project, the operational and effect indicators are mostly achieved,

and qualitative effects surpass expectations from the time of the project appraisal. In particular, the positive relationships built between TNFD staff and local people have led to significant changes in awareness and values among people, resulting in considerable transformations in both the natural and human spheres. These combined effects have greatly contributed to ecosystem improvements. Moreover, there is visible contribution to environmental conservation and balanced socioeconomic development in the target areas. Therefore, effectiveness and impacts of the project are very high.

3.4 Sustainability (Rating: ④)

3.4.1 Policy and System

At COP26[19] in 2021, Prime Minister Modi announced the "Lifestyle for Environment (LiFE)" initiative to encourage consumers and citizens to adopt behavior changes and promote environmental protection and sustainable lifestyles based on traditional values and practices of environmental conservation.

Additionally, to bolster climate change measures, the Ministry of Environment, Forest and Climate Change in India established a Green Credit Program in 2023. This program aims to enhance forest cover through afforestation, improve water management, promote sustainable agriculture, manage waste, reduce air pollution, develop eco-labels for environmentally-friendly products, protect and restore mangroves, and support activities related to environmentally-friendly buildings and infrastructure.

As noted in the Relevance section, both the Indian and Tamil Nadu governments continue to regard forests and biodiversity as vital areas of focus. Recent initiatives such as the Green India Mission, the *National Wildlife Action Plan (2017–2031)*, the *State Climate Change Action Plan Draft 2.0*, the Green Tamil Nadu Mission, and the *Tamil Nadu Policy on Invasive Alien Species and Ecological Restoration of Habitats* demonstrate a strong commitment from both the central and state governments. As new programs and schemes are being developed, there are policies and systems to ensure that biodiversity conservation will stay in place.

3.4.2 Institutional/Organizational Aspect

The TNFD, the executing agency, is the Tamil Nadu state government department responsible for planning and executing forest and wildlife conservation effort. The implementation of the project is managed by a Project Management Unit (PMU) established in the TNFD. There has been no change regarding the delegation of responsibilities to the TNFD within the state government since the time of the project appraisal.

According to the plan made at the time of the project appraisal, the TNFD was to be responsible

[19] The 2021 United Nations Climate Change Conference.

for the operation and maintenance of the assets created through this project. Furthermore, the TNFD was to secure budget for continuing the support for the VFCs and other community organizations as part of its routine operations. Additionally, the VFCs, EDCs, and SHGs involved in the project were expected to continue their activities independently after the project's completion.

At the time of the ex-post evaluation, Phase 2 of the project is being implemented, with the PMU in charge of its implementation. The PMU continues to be responsible for the operation and maintenance of the project. Table 5 presents the staffing situation of PMU as of February 2024. While there are several vacancies in administrative positions, the roles in the organization are clearly defined, and no issues related to daily operations due to personnel shortages have been reported.

Furthermore, an operational manual for the PMU was developed, clearly delineating responsibilities. It should be noted that, at the field level, TNFD staff were conducting project activities in parallel to their departmental duties.

Table 5: Human Resource Allocation in PMU

<Technical>

Post	Sanctioned post	Man in position (Feb 2024)
Chief Project Director	1	1
Project Director (A&F)	1	1
Project Director (Bio)	1	-
Project Director (TCPL)	1	1
Total	**4**	**3**

<Administrative>

Post	Sanctioned post	Man in position (Feb 2024)
Financial Controller (CAO)	1	1
Asst. Conservator of Forests	1	1
Asst. Director of Statistics	1	
Forest Range Officer	3	2
Forester	6	6
Statistical Officer	3	2
Statistical Inspector	3	3
Computer Programmer	1	1
Superintendent	2	2
Assistant	2	1
Steno Typist	5	3
Total	**28**	**22**

Source: TNFD

In the project, 33 EDCs, 30 ESDs, and 25 ETMCs were newly established. Table 6 presents the definition of each community organization, main activities, and their source of funds.

Table 6: Overview of Community Organizations

Organization	Purpose and activities	Source of funds
Village Forest Committee	Established for the sustainable management of forest. Registered under the JFM Act of Tamil Nadu.[20]	From membership fees, revolving fund provided by the project, and profit sharing from non-timber forest produce
Eco-Development Committee	Responsible for activities in and around the protected areas and biodiversity conservation. Registered under the same regulation as VFC, but the only difference is the areas EDCs operate are in the protected area, not in the forest. Hence, profit-sharing from non-timber forest produce does not arise. In contrast, they operate ecotourism and the revenue from the activities are owned by EDCs.	From membership fees and revolving fund provided by the project
Ecologically Sustainable Development Village	VFC specialized for Scheduled Tribes that exist around forests and protected areas, with no potential for economic activities such as ecotourism. Some ESDs were created by becoming independent from existing VFCs.	
Self-Help Group	Savings in the group and livelihood improvement activities.	Lending from EDC and ESD
Eco-Tourism Management Committee	Created for operating ecotourism. Some ETMCs consist of SHGs under the umbrella of EDCs, while others comprise members from multiple EDCs.	Revenue from ecotourism

Among the organizations above, EDCs and ETMCs were involved in the project's operation and maintenance through ecotourism. Both organizations are engaged in the daily operations of ecotourism as institutions even after the completion of the project. The following are examples of the operation and maintenance conducted by EDCs and ETMCs:

- Mannavur Kaikatti EDC: Operates hiking, basket boats (coracles), and kayaking around a lake outside the Kodaikanal Wildlife Sanctuary. Women from SHGs also run a canteen at the site. They have expanded their activities after the project completion by introducing a zip-line activity using revenues from ecotourism.
- Kalikesam ETMC: Operates an information center and basket boats around the Kanyakumari Wildlife Sanctuary. It manages four rooms of a guesthouse and a canteen. The ten employees are members of several EDCs.
- Karankadu EDC: Operates boat ride and canteen in the mangroves that are the habitat for dugongs. The businesses are run by employees and local volunteers.
- Point Calimere ETMC: Manages a safari within the Point Calimere Wildlife Sanctuary, handling collection of entry fees and driving the safari jeeps.

[20] Although VFCs were not formed under the project, they were established under TAP I and II.

3.4.3 Technical Aspect

The TNFD had experience with two ODA loan projects, which were completed without delay and yielded good results. The staff of the TNFD are Indian Forest Services or state forest services, recruited through a competitive exam and trained through courses established over many years. Therefore, they possess the necessary knowledge and skills for forest management, as well as a certain level of understanding regarding biodiversity conservation. In the project, various training sessions were planned to enhance the capacities of new staff regarding forest management and biodiversity conservation, which means there were no particular concerns regarding their technical capacity at the time of the project appraisal.

During the ex-post evaluation, regular training for staff was being conducted. The TNFD regularly assesses the training needs of its staff, identifying the knowledge and skills necessary for each member to fulfill their duties. Training sessions are provided by Indian forestry training schools and other specialized institutions. Operational manuals related to the project have been developed and are being utilized by relevant parties.

In the target protected areas of the project, activities were conducted based on a management plan, which is typically valid for five years. A new management plan is developed every five years.

Several capacity building training sessions were offered to community organizations as part of the project. Training was conducted on mitigating human-wildlife conflict and on the operation and maintenance of ecotourism, involving both TNFD staff and community volunteers. For the latter, a training manual was also developed. Regarding TCPL, on-site training was conducted on tree planting methods and on how to care for the planted trees.

As stated above, TNFD staff possess the necessary knowledge and skills as forest officers, with ongoing capacity building based on training needs. Various training sessions were also held for community organizations during project implementation, and no particular technical issues were observed.

3.4.4 Financial Aspect

In the ODA loan projects previously implemented by TNFD, there were no significant financial issues. For the funding related to the executing agency in the project, appropriate budgetary measures were expected to be in place, and there were no particular concerns regarding financial aspects.

In fact, the budget allocation from the state government to the TNFD has been conducted smoothly so far, and this was confirmed during interviews conducted during the ex-post evaluation. Between the completion of the project and the commencement of Phase 2, the budget for operation and maintenance was contributed by the state government or from existing schemes. Since fiscal year 2022, the budget has been included in Phase 2 of the project as the successive project started. At the same time, the budget for the maintenance activities of sea turtle

conservation and removal of invasive alien species is partly contributed by the IDWH.

At the ecotourism sites operated by EDCs and ETMCs, necessary costs are covered by entrance fees and facility usage fees collected from the visitors.

Regarding the revolving funds used for loans to EDC and ESD members, an impact assessment that looked into the repayment status of 34 groups, indicated that individual loans have better repayment conditions than loans to SHGs. Qualitative survey interviews revealed that in relatively small EDCs and ESDs, there are cases where loans are provided in turns to all members. In such cases, there is strong trust within the community, which means that, while repayments may take time, issues such as defaults have not occurred.

As stated above, there are multiple sources of funding to sustain the biodiversity conservation activities implemented in the project, and the financial resources at the ecotourism sites are secured. Thus, there are no financial problems.

3.4.5 Environmental and Social Aspect

In the project, from the time of the project appraisal and throughout the implementation, no negative impacts on the natural environment were anticipated, and such cases were not confirmed retrospectively. Moreover, the project was designed in such a manner that beneficiaries receive the benefits of the project equitably in the community. Special consideration was given to communities that are socially vulnerable, by such means as establishing new ESDs specifically for particularly impoverished villages or for those composed solely of Scheduled Tribes from the VFCs formed in the previous projects.

3.4.6 Preventative Measures to Risks

Biodiversity conservation is subject to various risks because of uncertainties inherent in the environment. The project recognized the importance of adaptive management, demonstrating a willingness to assess the constantly changing environment and adjust the management and activities of the protected areas as needed.

Moreover, no unexpected risks were reported from interviews with the PMU, field staff, and community organizations.

3.4.7 Status of Operation and Maintenance

In the ex-post evaluation, the conditions and methods of operation and maintenance of the major sites and facilities for the project were confirmed as follows:

Protected areas: Maintenance is conducted based on the established management plan. Typically, management plans are valid for five years, and new plans are developed for protected areas that reach this five-year mark.

Eco-tourism site (left), wattles removed (right) (Photos by the external evaluator)

Habitat (Areas where invasive species have been removed): The TNFD conducts regular maintenance to prevent the regeneration of invasive species.

Ecotourism sites: The external evaluator visited seven sites, all of which have been in operation for less than ten years. Overall, these sites are well-maintained, and facilities such as boats and accommodations are kept clean. The operating communities and TNFD field staff conduct regular inspections.

EPT: Maintenance is conducted every 5 to 10 years under the Project Elephant budget. This includes the removal of vegetation from trenches and repairs of eroded portions. The EPT sites in Erode and Coimbatore had already undergone such maintenance after the completion of the project.

Watering holes for the wildlife: Regular inspections and cleaning are conducted by the TNFD. The watering hole for elephants surveyed in Coimbatore is inspected and cleaned weekly.

The protected areas managed by the TNFD have secured budget and been maintained according to management plans. Continuous measures are taken to suppress the regeneration of invasive species in the areas where they have been removed. Other facilities do not appear to have issues related to budget or personnel and are managed properly.

All ecotourism sites are relatively new and are being managed well. There are no financial issues reported.

From interviews conducted at each site, no specific problems or deficiencies in operation and maintenance were noted. Several EPT sites expressed that adding hanging electric fences would be more effective.

In the project, there is a strong commitment at both the central and state levels, and new related programs and schemes have been established, providing a solid foundation for policy and system to continue promotion of biodiversity conservation. Operation and maintenance responsibilities are shared between the TNFD and community organizations, with the TNFD deploying personnel who possess sufficient technical knowledge and skills. Financially, the TNFD has secured

adequate funding through its budget and coordination with existing schemes. Similarly, community organizations have suitably allocated personnel needed to operate and maintain ecotourism sites, and no issues have been observed in terms of technical or financial aspects. Thus, a proper system for operation and maintenance, along with the necessary technical capacity and budget, is in place, ensuring that the facilities and ecotourism sites developed through the project are managed appropriately. No negative impact is observed regarding environmental consideration, and due consideration has been given to people with vulnerable background. Risks have been well mitigated. Therefore, the sustainability of the project effects is very high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented in Tamil Nadu in southern India, with the objective to conserve biodiversity by strengthening the management of protected areas, planting trees outside of forest areas, improving livelihoods, and enhancing the operational capacity of the forest department thereby contributing to environmental conservation and harmonized socio-economic development. The project is evaluated very high on relevance and coherence, efficiency, effectiveness and impact, and sustainability.

Regarding the relevance and coherence, the project was aligned with the policies and development needs of both the Indian and Tamil Nadu governments from the time of project appraisal to that of the ex-post evaluation. It addressed various development needs identified during the appraisal and contributed to resolving them. The project's design and implementation were adjusted to create synergies with previous and subsequent projects from the project planning stage, which is highly commendable. Owing to its collaboration with other government schemes and organizations, the project has prompted the formulation and issuance of multiple new policies, schemes, and government directives in the country. Regarding efficiency, the project was implemented largely as planned, except for a few deletions or modifications of its scope, and both the project cost and duration remained within the original plan. Effectiveness and impact generally achieved the quantitative targets, while several unexpected impacts were identified. Notably, the executing agency's focus on building mutual trust with local community organizations is a key lesson from the project. Sustainability is also ensured, with organizational structure, technical capacity, and budget in place for continuing similar activities in the future. No significant risks that could undermine the project effects were identified.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

None

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Project implementation through mutual trust with community organizations

In the project, strong emphasis was placed on forging a positive relationship between the TNFD and the members of community organizations. Through dialogues with people during the appraisal stage, giving due attention to communities that had not received government support, and regular visits by field staff, mutual trust was gradually built. In some cases where there had already been connections established from earlier projects, trust deepened over years of interaction. Such trust facilitated smooth communication, allowing people to obtain various information from TNFD staff. This, in turn, led to shifts in awareness and values, enhancing understanding of the importance of protecting the natural environment and coexisting with wildlife. As a result, these elements contributed significantly to the smooth implementation of project activities and bringing about successful outcomes.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

None

5.1.2 Subjective Perspective (retrospective)

None

5.2 Additionality

None

(End)

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs		
A. Biodiversity conservation	Habitat restoration	Almost as planned
	Resource protection	Almost as planned
	Reduction of human-animal conflict	Almost as planned
	Ecologically sustainable development	As planned
B. Increasing the natural resource base (afforestation outside forest area)	TCPL	Activity expanded
	Research	As planned
C. Institutional capacity development	Capacity development	More than planned
	Monitoring and evaluation	As planned
	Project management	As planned
D. Consulting services	International consultants 13 M/M National consultants 97 M/M	As planned
2. Project Period	February 2011–March 2019 (98 months)	February 2011–March 2019 (98 months)
3. Project Cost		
Amount Paid in Foreign Currency	JPY 415 million	JPY 42 million
Amount Paid in Local Currency	JPY 12,484 million (INR 6,640 million)	JPY 9,213million (INR 5,583 million)
Total	JPY 12,899 million	JPY 9,255 million
ODA Loan Portion	JPY 8,829 million	JPY 7,878 million
Exchange Rate	INR 1.00 = JPY 1.88 (As of September 2010)	INR 1.00 = JPY 1.65 (Average between January 2011 and December 2020)
4. Final Disbursement	December 2020	

Attachment 1: Planned and Actual Project Outputs

	Plan	Actual
A. Biodiversity conservation		
a. Habitat restoration, enhancement and management		
Strengthening of wetland planning and management	12 bird sanctuaries	
Conservation of critically endangered species of flora/fauna	9 circles	
Improvement of critical habitats by removing invasive and exotic species	3,000 ha	
Improvement of management of water, habitat and herbivores in Guindy National Park	50 ha	48 ha
Improvement of management of water, habitat and herbivores in Vallnadu Black Buck Sanctuary	50 ha	45 ha
Improvement of management of water in Protected Areas and Reserve Forests	80 places	81 places
Monitoring the impacts of climate change on biodiversity	—	—
b. Resource protection		
Strengthening of monitoring the incidences of fire, poaching and encroachment in Protected Areas and Reserve Forests	16 places	
Procurement of equipment for strengthening network of field officers	Binoculars, GPS, firefighting suits, firefighting equipment, communication devices, vehicles and motorcycles for forest officials, walkie-talkies, mobile phones, etc.	
Consolidation of forest boundaries by construction of Reserve Forest cairns	80,000	60,000
c. Reduction of human-animal conflict		
Identification and management of traditional migratory route	14 Divisions	
Establishment of solar-powered fencing	200 km in total	—
Establishing elephant-proof trench	400 km in total	381 km in total
Procurement of equipment to return strayed wildlife into its natural habitat	Cage, net, syringe, vehicles, etc.	
Training on dealing with human-animal conflict	Approximately 30 persons	28 persons
d. Ecologically sustainable development		
Socio-economic and forest development surveys	63 villages	
Eco-development activities	30 villages around Protected Area	
Ecologically sustainable development	33 Scheduled Tribe villages	
Community-based ecotourism	25 sites	
B. Increasing the natural resource base (afforestation outside forest area)		
a. TCPL	Plant 100 million trees in 143,000 ha of fallow land	Planted 80 million trees in 143,000ha + 8,600 ha (total 151,600 ha)
b. Research		As planned
C. Institutional capacity development		

a. Capacity development of TNFD staff	23,959 persons	27,311 persons
b. Capacity development of TCPL villages	5,000 villages	7,315 villages + 465 villages (7,780 villages in total)
c. Monitoring and evaluation		As planned
d. Project management		
Construction of buildings	144	143
Augmentation of office facilities and equipment		As planned
Strengthening mobilities	178	174
Project management staff		As planned
D. Consulting services		
a. Technical support related to the implementation methods of business activities for the Project Management Unit (PMU) b. Support regarding financial management, annual planning, and report preparation c. Support for planning and updating biodiversity and reforestation activities, as well as conducting various surveys, etc.	As planned	

Subject: FW: Ex-post evaluation report ID-P125
From: "SarinVineet" <SarinVineet.ID@jica.go.jp>
Date: Wed, May 20, 2009 4:48 pm
To: tnforest@tn.nic.in

Dear Mr. Sreeddharan,

Please find attached herewith the ex-post evaluation report. Trust you will find the same in order. The same has been approved by JICA Head office but has not yet been made public. Therefore, for now you may kindly use it for internal purposes only. Presentation of the same to the State Government is not a problem.

My apologies for the delay. Please let me know when you receive this.

Best regards

Vineet Sarin

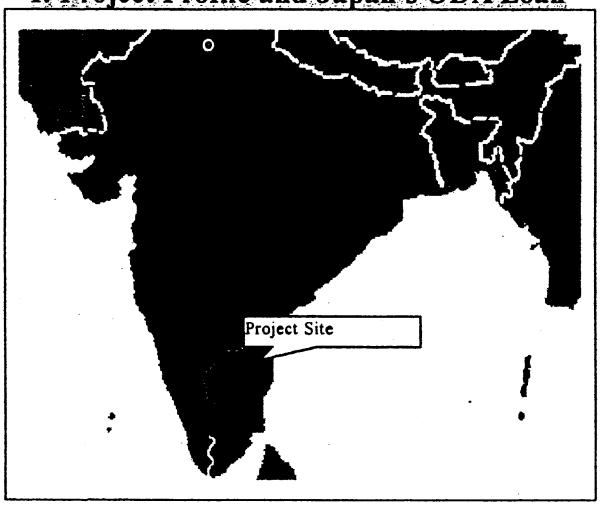
OFFICIAL USE ONLY

India

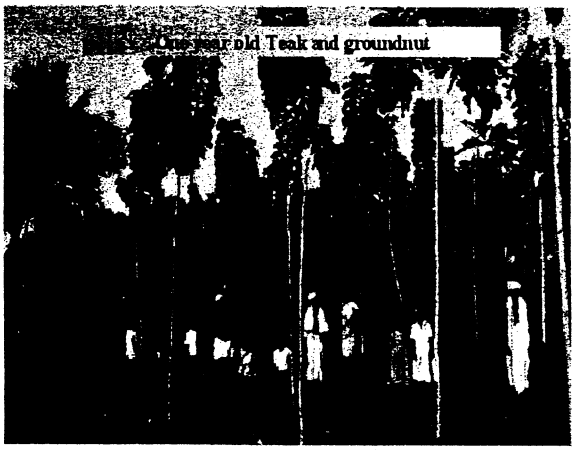
Forestry and Environment Project for Tamil Nadu State

External Evaluator: Koichi Ishii
(Pegasus Engineering Corporation)
Field Survey: January 2008

1. Project Profile and Japan's ODA Loan



Location of the Project Site



Forestry Extension - Tree cultivation in private lands

1.1 Background

Tamil Nadu State located in the south-eastern region of India has an area of 130,058 km[2][1] with a population of approximately 62,405,679 people[2]. Its population density is 480 people/km[2][3], making it one of the most densely populated states. Its western region is mountainous due to the Western Ghats mountain range, whereas in the eastern region, plains stretch towards the Bay of Bengal. The climate in the western mountainous belt averages an annual temperature ranging from 20° to 24°C, while the plains area in the eastern region is semitropical and hot throughout the year with temperatures of around 30°C. The average annual rainfall is 925 mm. The rainy season is from October to December. It is affected by the north-eastern monsoons.

The ratio of forest area in Tamil Nadu State was about 17% in 1992, which was slightly under 23% of the entire country of India. In the said state, deforestation had continuously progressed due to increases in demand for wood as fuel both in urban districts and rural areas. As a result, valuable animal fauna had been lost. Approximately 89% of the forests are owned by the national government. However, deforestation had been going on continuously due to development deriving from a rising population and urbanization. At the time of appraisal 7000 sq. kms. of forest area in Tamil Nadu State was degraded. The reason for the deforestation is that

[1] Equivalent to 4% of the entire nation of India
[2] Equivalent to 6.0% of the entire nation (2006)
[3] The nationwide average is 329 people/km^2 (2006).

a large number of residents depend on forest products for their livelihoods.

At the same time, deforestation marks the local community lands mainly due to urbanization and the encroachment. Traditional management methods for community resources such as trees and fruit trees have not been sustained and local residents have been unable to garner adequate profits from community forests.

Based on the above, it was concluded that it would be necessary to formulate and implement a project aimed at preventing denudation of these forests, regenerating deforested areas, promoting biodiversity conservation, and raising the productivity of these forests.

1.2 Objective

The objective of this project was to implement a sustainable, community participatory afforestation project (tree planting, extension activities, etc.) in Tamil Nadu State, where deforestation had been continuously progressing, by preventing further degradation of forest lands, regenerating degraded forest lands, promoting biodiversity conservation, and improving forest productivity, thereby contributing to the region's environment and alleviating poverty.

1.3 Borrower/Executing Agency

President of India/Forest Department, State Government of Tamil Nadu

1.4 Outline of the ODA Loan

Loan amount/disbursed amount	13,324 million yen /13,286 million yen
Date of Exchange of Notes/Date of Loan Agreement	January 1997 /February 1997
Terms of Conditions Interest Rate Repayment Period (Grace Period) Procurement	 2.1% 30 years (10 years) General Untied
Final Disbursement Date	May 2005

2. Finding (Overall Rating: A) **2.1**

Relevance (Rating: A)

2.1.1 Relevance at the Time of Appraisal

This project that aimed to prevent deforestation, regenerate forests, and promote environmental conservation was in alignment with the forestry sector plan of the National Forest Policy (formulated in 1988) and the Eighth Five-year Plan (1992 to 1997) whose goals were to recover and conserve ecological balance with the ultimate goal of covering one third of the country's land area with forest and woodland.

In particular, the development plan of the state specifically sets forth issues that have been regarded as important from past afforestation projects: promotion of land use that is in sync with the category of the forest, community participatory afforestation activities, assistance towards diversifying the income of residents dependent on the forest for their livelihoods, and researches and human resource development needed to carry out these activities. This project was designed to incorporate measures to address all of these issues.

It is said that Tamil Nadu State was once abundant forest land. However, pressure toward deforestation could not be arrested despite efforts by the state government to ban uncontrolled harvesting of trees, unrestrained logging to meet demand for lumber in urban areas, rising demand for firewood due to growing populations in rural areas, and excessive pressure to cut down forests due to overgrazing.[4] The loss and deterioration of the forests lowered the capacity to recharge water sources, brought on soil erosion, and reduced cultivated land area. Hence, it was an urgent issue to prevent deforestation and protect the forests.

In view of the above, it was judged that the relevance of this project was high in that there were pressing needs to supplement the demand for wood and to implement afforestation to reduce the pressure to cut down the forests.

2.1.2 Relevance at the Time of Ex-post Evaluation

The Tenth Five-year Plan (2002 ~ 2007) aimed at covering 25% of the national land area with forest by the last year of the plan in alignment with the abovementioned National Forest Policy. In addition, the plan emphasized the conservation of forest functions through soil and water conservation, forest management that takes into consideration the livelihoods of local residents, research and development, and extension activities. The approach adopted in this project was in alignment with the plan. The rate of forest and tree cover[5] in 2005 was

[4] The area of government-registered forests in the state was 2,620,000 ha in 1956, but was reduced by about 15% or 2,240,000 ha in 1992. The forest ratio of the state dropped from 20% in 1956 to 17% in 1992, which was below the national average of 23%.

[5] Forest and tree cover rate indicates the percent area of forest cover (area of all lands, more than one hectare area, with a tree canopy density of more than 10 percent which is measurable from a satellite) is higher than 10% of the land in the targeted region) and tree cover (tree patches outside the recorded forest area exclusive of forest cover and less than the minimum mappable area of one hectare which is not measurable from a satellite).

23.4%. The Eleventh Five-year Plan (April 2007 to March 2012) aims to increase the forest and tree cover by 5% at the end of the plan.

In the state's Ninth Five-year Plan (April 1997 to March 2002), the foremost priority was put on the revitalization of degraded forests. Based upon the goal, the state government carried out its policies and measures. In the following Tenth Five-year Plan (April 2002 to March 2007), in addition to the revitalization of degraded forests, focus was placed on sustainable forest management promoted by Joint Forest Management (JFM) and assistance to diversify the revenue of residents who were dependent on the forest. However, the open forest ratio[6] (46.0% in 2005) was high in comparison to the national average. Thus, a challenge was to enhance the volume and quality of the forest. The need for ecological conservation still remains high as does the need for forest conservation. Owing to this project, the infrastructure of the Forest Department was improved to some extent. However, it is essential to continue afforestation activities (especially activities under the JFM approach), human resource development, research and development, extension activities, and biodiversity conservation activities.

Implementation of the project was in alignment with the national plans both at the time of appraisal and at the time of the ex-post evaluation. The relevance of the project's implementation is extremely high.

2.2 Efficiency (Rating: A)

2.2.1 Output

In addition to afforestation, which is the major component of the project that accounts for 78% of the project costs, this project consists of several other components such as the capacity development of the Forest Department. Of the eleven activities planned, eight have exceeded their design ratio more than 100%. The reason is that an additional project has been implemented to plant trees on the JFM afforestation area (250 ha x 258 villages), to construct water usage facilities (50 ha/village x 258 villages), to improve extension facilities and equipment (15 sites), and other additional activities. Furthermore, the expanded activities to improve livelihoods helped the project to achieve its goals. In fact, at the start of the project, women's self-help groups (hereinafter referred to as SHGs) were created within the Village Forest Committee (hereinafter referred to as VFC)[7], which carried out various activities to improve livelihoods using microfinance, etc. This is due to the executing agency who concluded, based on JBIC's monitoring and interim review during the project's implementation, that in order to achieve adequate impact, the amount of microfinance had to be increased so as to expand the activities to improve livelihoods.

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[6] Open forest refers to forests with a tree canopy density between 10% and 40%: Open forest ratio = open forest area/forest area

[7] Anyone may participate in the VFC, but one man and one woman from one family must participate. The VFC elects representatives from its members for the Executive Committee (EC) that represents and operates the VFC. The EC consists of 5~15 representatives, excluding the President. The VFC has several hundred members.

For components other than afforestation, the facilities of the Forest Department were improved almost as planned, and monitoring using the geographical information system (GIS) began in some sections of the area. The training and extension activities provided to Forest Department staff members, VFC members, students, and others who have many opportunities to get in touch with local community members achieved a performance that surpassed the project design.

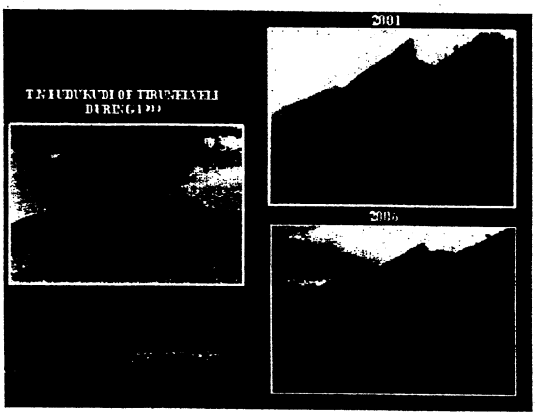
The project at the time of appraisal and its performance are shown in Table 1 below.

Table-1 Project Output

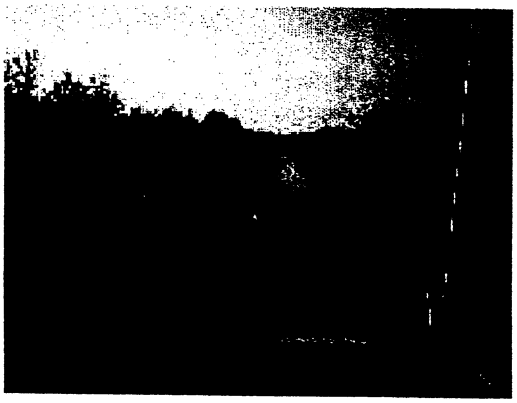
Plan (at the time of appraisal)	Actual Performance (at the time of ex-post evaluation)
(1) Planting Activities Total area of afforestation activities: 406,000 ha, Number of trees planted: 147 million trees a) JFM land owned by government*: 250,000 ha +1,000 villages b) Tribal life support *: 2,000 ha c) Community plantation development *: 50,000 ha d) Establishing a seedling nursery and distributing saplings: 25 million trees e) Water augmentation *: 100,000 ha f) Sand dune stabilisation: 500 ha g) Afforestation to protect against blown sand and storms: 500 km h) Timber growing stock improvement: 730 ha i) Teak canal bank plantations: 1,000 km j) Wetlands (mangrove) conservation: 1,226 ha k) Dry evergreen forests conservation*: 1,000 ha (Note: *Planting activities community participation) Number of VFCs established: 1505 (2) Developing a GIS database, etc. (3) Extension activities (establishing an extension centre, providing motor vehicles, video equipment, etc.) (4) NGO cooperation: Cooperation of 38 NGOs will be solicited. (5) Implementing training Domestic training: • In-service training for rangers: 7 courses (20	(1) Planting Activities Total area of afforestation activities: 457,454 ha (113% of planned output) Number of trees planted: 163 million trees (project ratio: 111%) a) JFM land owned by government*: 314,471 ha + 1,258 (rural communities) b) Tribal life support *: 2,025 ha. c) Community plantation development *: 25,690 ha (*planned values after changes in scope: 23,000 ha) d) Establishing a seedling nursery and distributing saplings: As planned e) Water augmentation*: 112,360 ha f) Sand dune stabilisation : As planned g) Afforestation to protect against blown sand and storms : 488 km. h) Timber growing stock improvement: 730 ha i) Teak canal bank plantations: 1,000 km j) Wetlands (mangrove) conservation: As planned k) Dry evergreen forests conservation*: 495 ha (Note: *Planting activities community participation) Number of VFCs established: 1,258 (84% of planned output) Number of SHGs established: 3,891 (2) As planned (introducing of a GIS database, starting of local observations[8]) (3) As planned (Extension in special techniques in afforestation is being carried out in the eastern district where bedrock predominates in 15 major local facilities.) (4) In conjunction with an increase in afforestation areas, the cooperation of 205 NGOs obtained. (5) From the lessons learned from the Swedish International Development Cooperation Agency (SIDA) run by afforestation project,

[8] It has become possible to monitor the changes over the years in tree canopy density and other factors in a section of the area under management.

Plan (at the time of appraisal)	Actual Performance (at the time of ex-post evaluation)
people each) • In-service training for Assistant Conservators of Forest (ACF) and Deputy Conservators of Forest,(DCF): 9 courses (80 people each) • PRA training for rural community surveys with VFC participation: 2 courses (total of 800 people, 1000 villages) Overseas training: • GIS training: 3 times • Master's course:2 times • Short term: 4 times (6) Office, motor vehicle for monitoring, office equipment, etc.	focus was placed on training activities for staff members of the Forest Department. (6) As planned, although the following items were added. • JFM afforestation area (250 ha x 258 communities) • Constructing water usage facilities (50 ha/village x 258 villages) • Improving extension facilities and equipment (15 sites), and others



Afforestation Areas Before and After



Mangrove Forest (targeted project area)

2.2.2 Project Period

The project was originally designed to be implemented for 62 months from February 1997 to March 2002. The physical activities contemplated were fully achieved (100%) by the end of 5th year. However, due to fluctuation of exchange rates, only 70% of the loan amount (9343.63 million yen) was drawn. As the loan agreement was valid till 29th May, 2005 it was decided to utilize the balance loan amount (30%) and carry out certain additional activities within the project period. Additional activities were undertaken with the concurrence of JBIC. Therefore, instead of 1000 villages, 1258 villages were covered (126%) and as against the original physical target of 406,000 ha., an achievement of 457,454 ha. was made (113%) with the loan amount. Additional activities were fully completed by the year 2003-04 and operation and maintenance works alone were carried out in May 2005 utilizing the JBIC funds. Hence there was no time over run in the project.

2.2.3 Project Costs

The project cost for the original five year period was 15,675 mil. JPY and the loan amount was 13,324 mil. JPY. At the end of the loan agreement period i.e. as on 29.05.2005, only 13,286.43 mil. JPY was spent after carrying out additional activities for two more years. This was out of the total loan amount of 13,324 mil. JPY. The planned project cost for five years was 15,675 mil. JPY. However, the actual project cost was 17,329 mil. JPY. The 11% increase is due to management of redeployed staff for three more years. This increased cost was met by the State Government in local currency (INR).

2.2.4 Overall Efficiency

The project was implemented for 62 months and the full scope of the physical activities were completed. However, in view of 30% of loan amount still available as per loan agreement, the additional activities were carried out for 2 more years with the concurrence of JBIC to cover additional villages and allied activities. The operation and maintenance works were carried out for further one year. Hence the continuation of the project activities is not related to time over run. The overall efficiency was very much in evidence as not only original scope of works but additional works were carried out within the time limit and well within the loan amount and the loan agreement period. At the end of the project period (2005), there was a savings of 38 million yen in Yen loan.

Overall efficiency is rated from the view whether the planed output except for the additional works has been implemented on the basis of the project period and cost estimation at the appraisal. The project period was 62 months as planed, to be rated as "a", and the project cost was within the estimated amount provided that exceeding 11% was used for the additional works, to be rated as "a." Therefore, the overall project efficiency was excellent.

2.3 Effectiveness (Rating: A)

2.3.1 Actual Afforestation Area, and Preservation of the Forest Lands and Regeneration of the Degradation of Forest Lands

Although it takes a few years before planted saplings form a forest,[10] the rate of forest cover in the state rose from 13.1% (17,045 km^2) in 1995 to 17.7% (23,044 km^2) in 2005 (there was an increase about 5,999 km^2 (4.6 points) during this decade). It is believed that the project has indeed played a role in achieving the increase. The afforestation area of this project (4,800 km^2) is about twice the area of Tokyo and is equivalent to 21% of the forest area registered in the state. The area of dense forest[11] in the targeted region is on the increase. VFCs were formed to jointly manage the forests together with community residents. As a result, it is surmised that the pressure to cut down the remaining natural trees has been alleviated. In the arid region, due to soil and water conservation activities, the soil's moisture retention capacity was improved and soil erosion was prevented, creating an environment suited to the growth and development of trees. Thus, this project has clearly regenerated deforested areas.

Table 2 Rate of Forest Cover and Forest and Tree Cover in Tamil Nadu State

Year	State Forest Area by Rate of Tree Crown (km^2)			Forest Cover Rate (%)	Forest and Tree Cover Rate (%)
	Dense Forest (40% and above)	Open Forest (Between 10 and 40%)	Total		
1987	10,866	7,491	17,472	13.43	-
1989	9,759	7,909	16,992	13.06	-
1991	9,757	7,909	16,992	13.06	-
1993	9,422	8,283	17,005	13.07	-
1995	9,418	8,327	17,045	13.11	-
1997	8,676	8,367	17,064	13.12	-
1999	8,659	8,398	17,078	13.13	-
2001[12]	12,009	8,983	20,992	16.14	20.80
2003	12,438	10,565	23,003	17.69	21.52
2005	12,440	10,604	23,044	17.72	22.04

Source: Forest Department/Forest Survey of India

[10] Although it differs according to tree species, it generally takes five to ten years. (FAO data on afforestation; http://www.fao.org/forestry/11833/en/)

[11] Forest where the canopy density is 40% and above; according to the Ministry of Environment and Forests of India

[12] Measurement methods changed in 1999 and 2001, and the survey map was reduced in scale from 1/250,000 to 1/50,000 and its accuracy was improved.

2.3.2 Biodiversity Conservation

Ecological regeneration through afforestation and soil conservation activities[13] and protecting the remaining natural trees has led to ecological conservation, wildlife protection, and biodiversity conservation. In conjunction with this project, due to the state government's efforts to promote wildlife conservation activities such as registration of national parks, the return of wild birds and other wildlife has been confirmed by local residents in the project-targeted area. Thus, the objective of the project has been achieved, since afforestation and water/soil conservation activities have been adequately carried out as had been planned for the protection of biodiversity.

2.3.3 Recovery of Productivity in Deforested Areas

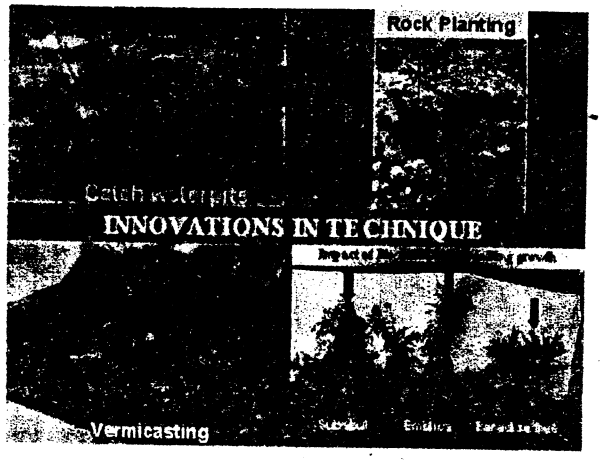
The Forest Department reports that the productivity of the project area has improved by nearly 70% from the time of appraisal owing to this project. The production volume of forest products in the state is given in Table 3. According to the Forest Department, the production volumes of firewood, timber and other minor forest products (MFPs) such as bamboo, fodder, fruit, and other special forest products have increased since the time of appraisal. Since tree species could be selected to meet local residents' needs, the production of forest products increased, thereby improving the livelihoods of community residents and alleviating the pressure to fell other remaining natural trees. The process from afforestation to the harvest of forest products takes time, and continued monitoring is required. Yet, as of now, it can be concluded that the objective of raising the productivity of the targeted forest area has been achieved.

Table 3 Annual Production Volumes of Forest Products

Forest Product	Annual Production Volume (ton)		Annual Production Volume (1000 rupees)	
	Plan at the Time of Appraisal	FY2004/2005 Performance	Plan at the Time of Appraisal	FY2004/2005 Performance
Firewood	10,200	17,057	10,800	18,157
Timber	4,200	7,421	48,660	85,977
Other MFPs	-	1,023	-	2,200

Source: State Statistics (data from the State Statistical Report, 2007)

[13] Activities include civil engineering works like constructing check dams to recharge water sources.



Afforestation

Environmental Education Activities

2.3.4 Afforestation Component Internal Rate of Return

Regarding the internal afforestation component of this project at the time of appraisal, the project benefit was defined as the sales amount of forest products for the twenty-five-year period after afforestation. When the economic internal rate of return (EIRR) was computed using afforestation costs and the subsequent maintenance and operations costs, the result obtained was 16.0%. When it was recomputed in this evaluation using the same conditions, the result obtained was 12.7%. The reason for the lower value is that the actual local currency conversion of the project cost exceeded that in the plan. This value indicates that this project's input was an optimal allocation of resources from a national economic standpoint, and the project's economic profitability was not lost.

2.3.5 Effect of Components Other Than Afforestation

In addition to afforestation, the extension and training facilities constructed under this project were adequately used and had an important effect on strengthening the capacity of Forest Department staff members and educating VFC members.[14] Focus was especially placed on training for the Forest Department staff members working in the field.

The expanded facilities and the audio-visual equipment were generally used often and greatly contributed to the efficient implementation of the project by the Forest Department. The monitoring system of the afforestation area is being strengthened by incorporating satellite data in GIS, and in some areas, it has reached the stage of being put to practical use.[15] The monitoring was once done manually before the project was implemented. Now that it is uniformly managed by the headquarters of the Forest Department, it has become possible to grasp the existing conditions immediately. Thus, other components that

[14] It had an important effect in assisting community participatory afforestation activities such as environmental education, communal sharing of forest products, etc.

[15] Although it is only a segment of the project area, changes in the forest and tree cover rate over the years are being monitored. At the same time, measures to address the issue of deviations from actual measurements are under review.

support the major task of afforestation have also shown their effects.

Based on the above, it can be stated that the project has produced its overall effects as had been planned and that the effectiveness of the project was high.

2.4 Impact

2.4.1 Impact on Poverty Reduction

With respect to the number of workers and working days employed in afforestation activities, etc. with the implementation of this project, approximately 61 million people were employed during the entire project period. Nearly 40% of the employed workers were women. The funds that were provided for the VFC joint account with the aim of improving livelihoods under this project attracted support activities in other sectors such as farming and regional development, thereby helping facilitate the building of social infrastructure, etc. based on the community's long-term forest conservation plan. The number of new business practitioners stemming from living improvement activities[16] is shown in Table 4. The total number of new business practitioners, 175,930 people, was equivalent to 38% of the total number of VFC members, or 465,588 people. The number of people in self-help groups (SHGs) that mainly consist of women was 62,495, which was equivalent to 13% of the VFC membership. In addition, an estimated 100,000 people, or 60% of the community residents whose livelihoods depended on forest products, acquired other sources of income. As a result, community residents dependent on the forest for their livelihoods were reduced by a ratio of several tens of percent, thus contributing to poverty reduction.

According to an interview survey of the community members living near the major project areas, women and children no longer had to travel for many hours to collect fodder (grass and leaves) and firewood from the forests. Since that labour was channelled into other productive activities, many households increased their income through farming and raising livestock. It was confirmed that the family budget's dependence on the forest dropped. Other opinions were that household income increased, diets improved due to expanded farming, housing improved due to increased production of construction materials (bamboo), income rose, the school attendance rate improved since children were freed from collecting firewood and fodder, and other favourable changes were seen in some segments of the communities. In particular, it is surmised that the Scheduled Tribes, who were highly dependent on the forest, and the poor were greatly improved for the better.

Although this project alone cannot eliminate poverty in the region, a limited impact was confirmed. In rural communities where joint forest management and community land management have been carried out, social harmony has increased through improved awareness about forest management, expanded community participation, joint activities, and organized distribution of forest products. The Forest Department conducted a sample survey

[16] They indicate activities aimed at diversifying income through new programs such as renting kitchen equipment using microfinance.

in 2005 and reported that the income of users of microfinance was about 3,000 rupees to 10,000 rupees per month and that the income of the targeted tribes had risen by an annual average of about 10%.

Table 4 Number of New Business Practitioners with Income-increasing Activities (Cumulative/People)

Type of Work	Men	Women	Total
Incense	257	1,771	2,028
Bamboo baskets	544	1,599	2,143
Coconut cords	445	574	1,019
Dairying	20,625	24,459	45,084
Bee-keeping	426	249	675
Poultry	1,568	1,090	2,658
Animal husbandry	4,186	3,726	7,912
Woven palm	1,055	2,071	3,126
Tailoring	1,082	5,611	6,693
Utensil and furniture hiring	161	179	340
Others	55,338	48,914	104,252
Total	85,687	90,243	175,930

Source: Forest Department data

The number of beneficiaries of this project is equivalent to the number of members of the Village Forest Committees (of the local communities) who have carried out afforestation activities. It is estimated that a maximum of about 470,000 people benefited from this project, which was about 0.8% of the total population of the state.

2.4.2 Impact of Environmental Conservation

The findings of interviews of community residents at the time of the field survey indicate the following positive impacts related to environmental conservation through afforestation.

The existence of natural trees with medium to high density in afforested areas in the designated forest region, natural regeneration of woods, regeneration of germination, the growth of grass, etc. were confirmed. The project yielded a good outcome in environmental conservation through the following important effects brought about by soil and water conservation works. They are the increased moisture in the soil, reduced soil erosion and runoff, a rise in the groundwater level (an average of 1 m~1.5 m) that contributed to an increased rice crop (according to interviews with local residents, two to three times more than before the project was implemented), increased availability of drinking water in the project villages, reduced pressure on the forests from illegal grazing, illegal felling of trees and mountain fires, and the contribution to the plantings of mangroves at wetlands, dry

evergreen forests, sand dunes, shelter belt, afforestation for lumber production, and afforestation along waterways. During the project period, 21,743 checkdams and 1,869 percolation ponds were constructed with a combined capacity 664.32 mil.cu.ft.

The selection criteria for tree species that were planted were based on JFM guidelines.[17] That is, priority was given to native tree species that are suited to the soil conditions of the afforestation area and have high survival rates. In afforestation activities for the restoration of biodiversity and native tree species, of the entire tree species planted in the project area, the ratio of native tree species was 100%.

Community members have reported seeing the return of a segment of valuable bird species in areas afforested under the project.

2.4.3 Other Impacts (Gender, etc.)

In conjunction with a rise in household income, many families have begun to use propane gas instead of firewood, and women and children have been freed from the work of collecting firewood and taking livestock out to graze. Through SHG activities, women have also learned the skill of negotiating, and the opportunity to speak at gatherings has increased.

Through the use of microfinance, a beneficiary who began compost production

Women participating in a gathering

2.5 Sustainability (Rating: A)

2.5.1 Executing Agency

2.5.1.1 Organization

Basic infrastructure has been improved due to this project. As a result, the Forest Department has a highly efficient framework for implementing the project. The Forest Department had 4,381 technical staff members at the time of ex-post evaluation and 4,997

[17] The guidelines explain the method of JFM and were formulated by the Ministry of Environment and Forests of India in 1993.

non-technical employees. In addition, a Project Co-ordination Cell was created in the headquarters of Forest Department to plan, monitor, and coordinate the entire project.

2.5.1.2 Technical Capacity

In the past, the Forest Department achieved comparatively good results (use and management of resources for residents) in the afforestation project implemented under the assistance of the Swedish International Development Cooperation Agency (SIDA). The department effectively applied its experiences and techniques learned from the past project to this project. In addition, after completion of the project, training courses of a duration extending from three days to one month concerning afforestation techniques and joint forest management have been continuously held for the staff of the Forest Department (as a part of JBIC phase 2 ODA loan project), VFC members, and NGOs in order to promote the smooth implementation of the project and maintain its sustainability after the end of the project. The Forest Department has been making efforts to improve the practical abilities of the forest officers, especially those who work in the field, so that they learn the knowledge required for facilitating sustainable forest management with community participation.

The JFM approach is one of the important elements of the training activities, and, in fact, the training method is based on a manual. The range of monitoring with the use of GIS has been expanded to include, for instance, forest and tree cover rate, and a monitoring system has been firmly established. It will take a period of five to ten years to apply the outcome of afforestation trials carried out by research institutes to the project. Hence, the project is basing its tree species selection on past trial results. This practice is indeed important in constantly raising the quality of afforestation.

Based on the above, it can be judged that technical problems with regard to operation and maintenance are not anticipated.

2.5.1.3 Financial Status

The Forest Department's annual budget for the project did not change during the project's implementation and after completion of the project. It remained around 900 million rupees. Training and extension activities have continued at the same pace as during the project's implementation. Thus, the state government's efforts to continue the activities can be seen. The ratio of the Forest Department's budget to the state's overall budget has been on a downward trend since the time of appraisal when it was 0.9%. However, the actual budget amount has increased. It is expected that the budget will continue to be appropriately allocated, which reflects the intentions of the Forest Department.

In addition, the agreement between the Forest Department and the VFC stipulates the benefit distribution of forest products[18] and the maintenance and use[19] of the village

[18] VFC receives all the benefits derived from forest products for special use. On the other hand, benefits from lumber are distributed to the Forest Department at 10% and to the rural development

development fund[20] (to be spared for operation and maintenance costs such as reafforestation expenses). It further provides that the maintenance cost of the project forest area will be paid from this fund.

Based on the above, it can be concluded that the financial system for operation and maintenance has been well established, thereby securing the sustained effects of this project.

Table 5 Annual Budgets of the State and Forest Department
(Unit: Million Rs.)

Year	1999	2001	2003	2005	2007
Total Budget Amount of the State	207,208	215,570	252,710	280,771	591,391
Forest Department Budget	1,980.3	2,080.1	1,966.5	2,415.0	3,063.2
(The lower tier is the ratio (%).)	1.0%	1.0%	0.8%	0.8%	0.5%
Project Budget	961.4	1,160.4	895.6	822.4	1,069.7
(The lower tier is the ratio (%).)	49%	56%	46%	34%	35%

Source: Response sheet of the Forest Department questionnaire

2.5.2 Operation and maintenance

The ways in which the operation and maintenance method was applied during the project period were adequate and appropriate. For instance, approximately 52 million rupees were allocated to cover the annual costs of operation and maintenance. After completion of the project as well, operation and maintenance have been carried out satisfactorily. In addition, the facilities and equipment that were provided under this project continue to be frequently used and are appropriately maintained overall.

The organizational structure of the Forest Department responsible for controlling the operation and maintenance of this project is headed by the Chief Conservator of Forests, assisted by Conservators of Forests and District Forest Officer under whom the Range Forest Officers assumes field-level responsibilities.

Forest Officers including the Range Forest Officers participate in the VFC meetings as a Member-Secretary. The meetings are held frequently and Executive Committee meetings are also held once a month. Before the project was implemented, there were many cases of illegal cutting of trees and goat grazing, but the VFC is now able to take self-regulatory measures within the committee.

This project placed emphasis on addressing the issues of diversifying the revenue of VFC and its livelihood improvement activities utilizing a system of microfinance. As a result, a certain degree of effect is showing, and there is no concern about sustainability over the short and medium term. It is necessary to continuously monitor and confirm the

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fund managed by the VFC at 90%.

[19] In this fund, based on the current government's order, the Forest Management Association opens a bank account for the fund, which is put under the control of the chairman and secretary-general of the Forest Management Association (normally, forest officers of the Forest Department).

[20] Based on the performance of the SIDA project, the agreement signed between the Forest Department and the Forest Management Association stipulates an appropriate amount to be reserved in the fund.

self-reliance of livelihood improvement activities. However, the evaluation is that overall, there is no problem with the project's sustainability.

3. Conclusion, Lessons Learned, and Recommendations

3.1 Conclusion

In light of the above, this project is evaluated to be highly satisfactory.

3.2 Lessons Learned

In this project, the JFM system raised the awareness of local residents to participate in the project. When similar projects are formulated in the future, it will be beneficial to incorporate a mechanism to invite local residents to take an active part from the stage of project implementation, for instance, in profit sharing of forest products. However, during the initial stage, the yield amount is inadequate and therefore, funds for livelihood improvement activities will be insufficient. In this project, direct financial assistance was provided until stable revenue was generated, thereby spurring on support for other sectors. A result was that the impact on improving livelihoods appeared as had been planned.

The major objectives of the project can be evaluated as having been fully achieved, but the issue of project design that includes a data-monitoring system for each objective still remains.

3.3 Recommendations for the Forest Department of Tamil Nadu State

There are no recommendations.

India

FY2017 Ex-Post Evaluation Report of Japanese ODA Loan Project
"Tamil Nadu Afforestation Project (II)"

External Evaluator: Noriyo Aoki, Alfapremia Co., Ltd.
Miwa Hayashi, Alfapremia Co., Ltd.

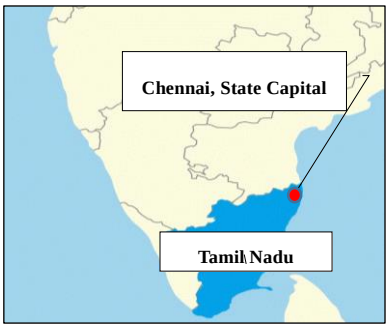
0. Summary

This project was implemented with the aim to regenerate forests and improve the standard of living of local residents by afforestation and livelihood improvement activities using the community participatory method at the village level[1] in the state of Tamil Nadu in the south-east of India, thereby contributing to the improvement of the local socio-economic situation.

This project is highly relevant, as it is consistent with priority areas in the development policy of India's and Japan's ODA policy, and also with development needs. The efficiency is high, as its cost and duration were within the plan. The afforestation was implemented mostly according to the plan, with a high survival rate of planted trees and forest regenerated. In addition, it is recognized that the annual income of the targeted villages has increased because of income gained from small scale business using micro credit implemented through this project at least for a certain period. Therefore, the effectiveness is high. The rise of the groundwater level has been confirmed by survival of planted trees and improvements of the soil conservation facilities, and the impact such as the diversification of the cropping items emerged. Residents' awareness of forest protection and nature conservation also increased, forest fires decreased, and trees are being protected through appropriate management of livestock. Social fencing, which monitors illegal grazing and felling trees, has also been established. As such, the effectiveness and impact of the project are both judged as high. The operation and maintenance system of the executing agency is well established; there is no problem with technical capabilities and the project is mostly maintained. Although there are a few issues remaining with the financial sustainability of village forest councils, the sustainability of the effects emerged by this project is high.

In light of the above, the evaluation result of this project is highly satisfactory.

1. Project Description



Project Location

Workshop on Effect of Afforestation
Vellore District

[1] In this context, the "village" of village forest councils is often not the same as the administrative village. This refers to villages consisting of one or several settlements.

1.1 Background

The state of Tamil Nadu is located in south-east India facing the Indian Ocean, with an area of 130,000 km^2 and a total population of 72.13 million.[2] It is an industrial state that is representative of South India. The western part of the state is a mountainous area in the Western Ghats, while it has a wide plain spreading to the Bay of Bengal of the eastern part. The western mountainous area is warm year-round with an annual mean temperature of 20 to 24°C. Since the eastern plain is in the subtropical zone, it is hot year-round, with temperatures around 30°C. The annual mean precipitation of the state is 925 mm[3] and it is affected by the Northeast Monsoon.

Tamil Nadu began the Tamil Nadu Afforestation Project in 1997, planting trees in 430,000 ha of scrub. However, cutting of fuel trees and grazing by free-range livestock put a burden on forests, and about 130,000 ha of the 270,000 ha remaining scrub that were not covered in Phase I, needed afforestation and regeneration of forest through Phase II by the ODA loan.

1.2 Project Outline

The objective of this project is to regenerate forests and improve the standard of living of local residents in the state of Tamil Nadu in the south-east of India by afforestation and livelihood improvement activities using a community participatory method at the village level, thereby contributing to the improvement of the local socio-economic situation.

Loan Approved Amount / Disbursed Amount	9,818 million yen / 9,199 million yen	
Exchange of Notes Date /Loan Agreement Signing Date	March 2005/ March 2005	
Terms and Conditions	Interest Rate	0.75%
	Repayment Period (Grace Period)	40 years (10 years)
	Conditions for Procurement	General Untied
Borrower/Executing Agency	The President of India/ State Government of Tamil Nadu, Forest Department	
Project Completion	March 2013	
Main Contractor	No	
Main Consultant	No	
Related Study	"Tamil Nadu Afforestation Project(Phase II)" State Government of Tamil Nadu, Forest Department (February 2001)	
Related Projects	Japanese ODA Loan Project "Tamil Nadu Afforestation Project" (1997)	

[2] 2011 census.
[3] The annual mean precipitation from 2005 to 2015 (India Meteorological Department).

2. Outline of the Evaluation Study

2.1 External Evaluator

Noriyo Aoki (Alfapremia Co., Ltd.)

Miwa Hayashi (Alfapremia Co., Ltd)

2.2 Duration of Evaluation Study

This ex-post evaluation was conducted during the following schedule.

Duration of the Study: August 2017 - January 2019

Duration of Field Study: November 26 - December 8, 2017, April 8 - May 12, 2018

3. Results of the Evaluation (Overall Rating: A[4])

3.1 Relevance (Rating: ③[5])

3.1.1 Consistency with Development Policy of India

The government of India aimed to achieve 25% of forest and tree cover rate[6] by the end of the *10th five-year plan (2002–2007)*, and 33% by the end of the *11th five-year plan (2007–2012)*. In *the 10th five-year plan*, the focus was on the regeneration of scrub and sustainable forest management through the promotion of Joint Forest Management (herein after referred to as "JFM").[7] Support for alternative ways to earn a living for those dependent on forests was also proposed.[8] The government of India announced the *National Forest Action Program (NFAP)* in 1999 as a comprehensive implementation plan to tackle issues identified by the *1988 National Forest Policy*. The NFAP addressed: 1) protection of existing forests, 2) strengthening restoration potentials of scrubs, 3) restriction on felling, 4) enhancement of policies and organizations, and 5) expansion of the area of forests.[9] In *Tamil Nadu's 10th five-year plan (2002–2007)*, scrub renewal was one of the highest priorities.[10] Furthermore, the government of India promoted afforestation in areas outside of forest reserves and conservation areas to increase forest and tree cover rate in the *11th five-year plan (2007–2012)*.

In the ex-post evaluation, the government of India did not set a goal for forest or tree cover rate in the *12th five-year plan (2012–2017)*. However, it addressed enhancement of forest

[4] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[5] ③: High, ②: Fair, ①: Low

[6] A set of tree crowns with the crown rate of 0.1 (10%) or higher and an area of 1 ha or larger is called a forest. Tree crowns refer to branches and leaves. When the crown rate is less than 0.1, the area is called scrub, which is not considered a forest. When the crown rate is 0.1 or higher but less than 0.4, it is called open forest. At the appraisal, a crown rate of 0.4 or higher was called dense forest, but at the time of the ex-post evaluation, classification of dense forest was subdivided, and a crown rate of 0.4 or higher but less than 0.7 was called moderately dense forest, while 0.7 or higher was called very dense forest. Forest cover is obtained by dividing the sum of open forest, moderately dense forest, and very dense forest by the geographic area. Crown rate is obtained by dividing the area of lush trees within 1 ha by the geographic area. Therefore, crown rate and forest cover rate are different. Forest and tree cover rate is calculated by combining the forest cover rate with a crown rate of less than 0.1.

[7] A scheme that was implemented in the 1990s to conserve and regenerate forests by people participations, in which highly dependent on forests around the target area are encouraged to participate in forest projects to achieve both recovery of forests and improvement in livelihood of the poor. Residents create VFC, and with the support of the Forest Department and NGOs, afforestation of the target area and the forest management "microplan" are formulated. The Forest Department provides seedlings to VFC based on the same plan, and performs afforestation and conservation jointly.

[8] Materials provided by JICA.

[9] Materials provided by JICA. As a comprehensive implementation plan to tackle issues identified by the *1988 National Forest Policy*, the government of India launch the *National Forest Action Program (NFAP)* in 1999, but the 1988 National Forest Policy became the major sector policy again.

[10] Materials provided by JICA.

management and greening through village forest council (herein after referred to as "VFC") of JFM and enhancement of forest management at the state level.[11] The *11th five-year plan (2007–2012) of Tamil Nadu* addressed afforestation by the federal government and the state, including afforestation by this project, enhancing afforestation of areas outside of forests to preserve livelihood, and increasing forest cover rate. In the following *12th five-year plan (2012–2017)*, the aim was to restore scrub, promote afforestation outside of forest areas, and increase forest cover rate.[12]

In light of the above, this project is consistent with development policies of the governments of India and the state of Tamil Nadu both at the time of appraisal and ex-post evaluation.

3.1.2. Consistency with Development Needs of India

The forest cover rate in Tamil Nadu in 2001 before the start of this project was 16.5%, which was lower than the average forest cover rate in India (20.1%). Therefore, improving the quality of forest (decreasing areas of scrub and open forest) and expanding the area of forest became major issues.[13]

Many people, including the poor, depend on forests as means for livestock feed, fuel, and income, and the burden on forests was increasing with population growth. As a result, deterioration of the quality of forests and decline in soil and moisture conservation function became serious, and the underground water table dropped. This led to an insufficient agriculture water and drinking water, putting pressure on the livelihood of the poor. The vicious cycle, which caused using excessive forests exceeding allowable amount to maintain sustainable forest conservation, occurred. Therefore, with the expansion of the area of forests, improving the standard of living for people who were dependent on forests became an important issue.[14]

In Tamil Nadu, before the start of this project, forests had deteriorated and scrub requiring immediate measures had spread to about 700,000 ha.[15]

At the ex-post evaluation, forest cover rate in India had increased to 21.3% in 2015 from 20.6% in 2005.[16] The forest cover rate in the state of Tamil Nadu was 17.7% in 2005, increased to 20.3% in 2015,[17] which was below the national average in India, but did show an increasing trend.

Many people, including the poor, had depended on forests as their only means of acquiring livestock feed, fuel, and income. However, as will be discussed in the section on effectiveness and impact, dependence on forests has decreased, and other means to improve livelihood and diversification of cropping items became possible as a result of this project. In view of the above the recovery of forests, improvements in soil and moisture conservation function of forests, and a positive impact on the supply of agricultural and drinking water can be inferred.

Illegal forest felling mostly disappeared[18], and the vicious cycle identified at the time of the

[11] Results of interview survey to the executing agency.
[12] Responses to the executing agency questionnaire.
[13] Materials provided by JICA. *India State of Forest Report*.
[14] Materials provided by JICA.
[15] 1995 The Forest Department. Materials provided by JICA.
[16] *India State of Forest Report*.
[17] *India State of Forest Report*.
[18] According to the interview survey in 24 villages, 22 villages including afforested areas and surrounding forests are answering that illegal logging has ceased.

appraisal as stated above was eliminated. Thus, not only did the forests expand in area but the amount of forests with a higher crown rate also increased. People who previously relied solely on forests for their livelihood were now less dependent on forests, at the same time the living standards improved.[19]

According to *India's State of Forest Report*, based on satellite data of India, in the case of targeted districts of Integrated Watershed Conservation Afforestation Program (hereinafter referred to as "IWDP") of this project, the area of scrub was 177,700 ha in 2005, which decreased by136,800 ha to 40,900 ha in 2015. In contrast, the area of open forest was 9,404 ha in 2005 but increased by 1,941 to 11,345 ha in 2015. Area of dense forest was 1,076,900 ha in 2005, and increased by 87,000 ha to 1,163,900 ha in 2015.[20] Such achievements as the decrease in scrub and increase in the area of open and dense forests can not necessarily be said to be the result of this project given that seedlings planted during this project had different growth rates depending on tree species, that young seedlings had few branches, and the growth in the "Tamil Nadu Afforestation Project" started in 1997, (hereafter it is referred to as "Phase I") trees became visible. Still, this information does indicate that the forests of the state of Tamil Nadu are in good regeneration status.

The Phase I, and this project (Phase II) targeted different VFC. "Tamil Nadu Biodiversity Conservation and Greening Project (herein after referred to as TBGP)," which began in 2011, is different from both Phase I and Phase II which focused on planting in state properties, and TBGP promotes afforestation in private property. Each phase has different duties and roles.

In light of the above, the development needs that were urgent at the time of appraisal were fulfilled at the time of the ex-post evaluation. Both the prioritization of this project and selection of the target area are considered to be highly relevant.

3.1.3 Consistency with Japan's ODA Policy

In the *Medium-Term Strategy for Overseas Economic Cooperation Operations (2002)* out of the priority areas of support for India, this project was designed to contribute to "regional development to benefit the poor" and "environmental improvement."[21] In the *Country Assistance Strategy for India (2004)*, the forestry sector is positioned as a major sector to support India. Besides improving the amount and quality of forests through expansion of forest area and reduction of open forest rate, the project promotes sustainable supply of forest products to the poor who are highly dependent on forest resources and earn income without relying on forests by supporting the acquisition of alternative income measures, which contributes not only to preserving the natural environment and water resources but also to making the lives of local residents stable and improved. The urgency and importance of this project are considered high from the viewpoint of poverty alleviation.[22]

[19] Responses by the executing agency and field survey results.
[20] *India State of Forest Report* and responses from the executing agency.
[21] Materials provided by JICA.
[22] Materials provided by JICA.

3.1.4 Appropriateness of Project Plan and Approach

This project was a community participatory afforestation plan that catered to the afforestation situation of the state of Tamil Nadu, and afforestation was implemented in accordance with village development activities and livelihood improvement activities at the initial introductory stage. As a result, forests were regenerated, and the residents' standard of living and poverty conditions improved. Therefore, as the solution measures against the issues, this project plan and its approach can be considered relevant.

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

Some of the project outputs exceeded the planned values, since afforestation was performed by the state government funds within the overall project cost, but the other outputs mostly met the planned values. The plan and actual are described in the section "Comparison of the Original and Actual Scope of the Project" at the end of this report.

3.2.1.1 Afforestation Program

There are two types of afforestation programs, the Integrated Watershed Development Program (IWDP) and the Integrated Tribal Development Program (ITDP), and both were implemented.

IWDP is divided into an upper zone and a lower zone, where the upper zone refers to an area within a small watershed with a steep gradient, and 100 ha of afforestation was implemented for each VFC. In the lower zone, having a gentle slope adjacent to villages, 150 ha of afforestation was implemented for each VFC. Planted items under IWDP included native species that are in high demand for daily needs, such as fuel wood, fruits, and materials for crafting.

On the other hand, ITDP is not divided into upper and lower zones, and 100 ha of afforestation was undertaken for each VFC. The afforestation tasks, such as planting seedlings and initial watering, were performed by residents of VFC. Residents also provided labor for soil and moisture conservation construction related with afforestation, such as creating infiltration trenches, check dams, and percolation pond.

Table 1 Comparison of Plan and Actual Related with Outputs [Note 1)]

Items	Plan	Actual
IWDP		
Afforestation Area	162,500 ha	189,250 ha
(Scrub Area Within)	125,000 ha	147,250 ha
Number of Implemented Villages	650 villages in 23 districts	757 villages in 25 districts [Note 2)]
ITDP		
Afforestation Area	15,000 ha	19,300 ha
Number of Implemented Villages	150 villages in 13 districts	193 villages in 16 districts [Note 2)]
Farm Forestry[23]		
Seedlings	N/A	1,025,000
Grafts	N/A	69,000
Labor by Residents (Planting Seedlings, Soil and Moisture Conservation Work)	16,591,000	20,440,000
Soil and Moisture Conservation		
Check Dams	4,152 facilities	5,271 facilities
Percolation Pond	1,177 facilities	2,026 facilities

Source: Responses to the executing agency questionnaire.
Note 1) Since the additional afforestation budget was allotted by the executing agency within the total project cost, the actual area of afforestation and the number of villages were larger than that originally planned. Due to fluctuations in the exchange rate during the project implementation period, additional afforestation became possible.
Note 2) Increasing number of the districts is due to a separation of some districts implemented for administrative strengthening.

3.2.1.2 VFC Formation

Guidelines for VFC (*Guidelines for Implementation of Joint Forest Management in Tamil Nadu*) were revised in 2005 and new VFCs were formed based on this guideline. VFC is an organization newly established by the Tamil Nadu Society Act (1975).[24] For VFC formation and microplan preparation, 480 NGOs held participatory orientations at target villages.

Requirements for VFC establishment are different between IWDP and ITDP. VFC selection requirements for IWDP mandate that the village is within 5 km of scrub, there exists vicious cycle (damage to forest due to felling, leading to decline in the standard of living, and further felling), one female and one male from each household participate as members, and the total number of participants be 60% or more of the village population. VFC selection requirements of ITDP are that 80% or more of the population of the target village is part of the Schedule Tribe (herein after referred to as ST), and that the target village is 5 km or more from the closest city.

Table 2 Comparison of Plan and Actual Related with VFC Formation [Note 1)]

Classification	Plan	Actual
IWDP		
Number of VFC	650	757
ITDP		
Number of VFC	150	193
Total	800	950

Source: Responses to the executing agency questionnaire.
Note 1) Since the afforestation budget was allotted by the executing agency within the total project cost, the actual number of VFC were larger than that in the originally planned.

[23] The Forest Department grew seedlings and sold them to farmers. The cost of these seedlings farmers bear was determined to be 50% through discussion with the JICA India office and the Forest Department at the start of the project. Responses to the executing agency questionnaire.
[24] Responses to the executing agency questionnaire.

3.2.1.3 Livelihood Improvement Activities

In this project, to reduce the burden on forests by local residents who belong to the poor, the project developed infrastructure and implemented activities to improve income in the target villages. The project refers to these livelihood improvement activities as Buffer Zone Activity.

1) Community Development Works

Community Development Works were implemented by both IWDP and ITDP villages. Facilities that are important for villages, such as water tanks, community facilities, VFC offices, threshing floors, roads, toilets, and food distribution centers, were constructed. These were entry activities conducted before starting the afforestation.[25] The works were implemented in corporation with other departments,[26] and the number of village infrastructure development facilities constructed was 4,393.[27]

2) Income Generation Activity

A Guidebook on Income Generating Activities (2005) was formulated, and activities were implemented accordingly. For each targeted VFC of IWDP villages, 1,075,000 rupees on average was granted through the authorization by the Forest Department, and for each targeted VFC of ITDP villages, 700,000 rupees on average was granted. From these funds, 10,000 rupees per head was given to individuals or members of Self-Help Group (hereinafter referred to as "SHG") as loans. Interviews revealed that the interest on the loan for SHG was 12%.[28] The number of micro credit recipients comprised 41,688 males and 117,553 females, a total of 159,241.[29] The interest repayment of this micro credit was collected by VFC and became a revolving fund.

3) Establishment of SHG

SHG was established in accordance with the SHG guidelines proposed by Tamil Nadu Corporation for the Development of Women.[30] One SHG organization consists of 15 to 20 members. The requirements for membership included being a member of VFC, being part of a household living below the poverty line, and having an annual income of 12,000 rupees or less. Basically, the target group included residents 18 to 60 years of age. SHG members share a similar economic status, especially women, forest dependents, ST, Scheduled Caste (hereinafter referred to as "SC"), people without a spouse who is able to earn income, and landless farmers, but if the above conditions are met, males can be members as well. According to the final evaluation performed by the executing agency,[31] SHG members were 75% female and 25% male.

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[25] These activities were performed to build relationships between residents of target VFC and government departments. As confirmed by the Forest Department Headquarters, the budget of construction etc. was handed over from the Forest Department to other administrative bureaus, but since the responsible office was the department in charge of each facility, it was supposed not to report the repair situation and so on. If anything is needed for repair, the chairperson of VFC is to issue a letter directly to the administrative bureau or department in charge, and request repair. According to the request, repair costs are to be secured by each administration bureau or department in charge.

[26] Twenty-four departments, such as the Ministry of Rural Development, Department of Agriculture, Ministry of Social Justice and Empowerment, and Department of Animal Husbandry, Dairying & Fisheries, cooperated.

[27] Materials provided by JICA.

[28] Measures and penalties for failure to repay loans were to be determined by each group.

[29] Materials provided by JICA. The information on attributes of micro credit recipients such as caste and social class, or the amount of loans from VFC to SHG were unable to obtain.

[30] *Handbook for Self-Help Groups by Tamil Nadu Corporation for Development of Women, 2003.*

[31] *Terminal Evaluation Study of the Tamil Nadu Afforestation Project (TAP)-Phase II, 2015*

Table 3 Comparison of Plan and Actual Related with the Formation of SHG [Note 1)]

	Plan	Actual
Number of SHG Established	1,600	3,283

Source: Responses to the executing agency questionnaire. Materials provided by JICA.
Note 1) This includes newly established SHG and existing SHG that began to receive loans with permission from VFC and the Forest Department. The number of newly established SHG and other SHG were unable to be confirmed.

3.2.1.4 Strengthening of Forest Management Capacity

1) Construction of the Forestry Extension Center

There are 11 facilities constructed by this project as the Forestry Extension Center.[32] There was one facility constructed in each of the 11 districts. If Forestry Extension Centers constructed in Phase I are included, there is one facility in every district of Tamil Nadu.[33] After the start of this project, in 2005, 2006, and 2007, six facilities, four facilities, and one facility were constructed, respectively. They were established in the early stage after the start of this project. The Forestry Extension Centers were used for training of farmers and VFC.

2) Training

Since the training was prioritized by the project, not only forest management field staff, but VFC representatives and members, SHG members, and NGO staff all received training.[34] The total number of trained participants through this project was 83,875 staff from the Forest Department who instructed VFC were trained at the Tamil Nadu Forest Academy, the National Institute of Rural Development, the Indian Institute of Forest Management, and nearby Forestry Extension Centers. The contents of training included the objectives and activities in framework of JFM, afforestation technical guidance, promotion of female participation, micro credit and business, dealing with forest fires, and soil and moisture conservation.[35]

Table 4 Actually Trained Stakeholders (unit: number of person)

	Actual
Senior Staff of the Forest Department, Forest Officer	737
Field Staff of the Forest Department, Forest Subordinate Service [Note 1)]	9,891
Office Staff of the Forest Department, Forest Ministerial Service [Note 2)]	875
NGO	515
VFC	2,629
SHG	11,017
Farmers	37,037
Other (Village Administrative Staff, etc.)	21,174
Total	83,875

Source: Responses to the executing agency questionnaire.
Note 1) Forest staff in the field, rangers, forester, and watcher.
Note 2) Office administrative staff.

3) Expanded Use of Geographical Information System (GIS)

To process and analyze topographic and administrative area data, and to create a database and websites, GIS software was installed at the Forest Department Headquarters. The software was provided to 15 forest circle offices[36] so they could access the Headquarters' database in real time. Also, 329 GPS devices were introduced for field staff to survey the area of forests and afforestation planned areas. To foster staff necessary to build GIS, trainings were held both in India and overseas. Instructions on how to use GIS during Phase I were provided during the

[32] Materials provided by JICA.
[33] Materials provided by JICA. This means it was constructed in all districts at the time of appraisal.
[34] Materials provided by Implementing Agency.
[35] Responses to the executing agency questionnaire.
[36] A higher supervising office that supervises 3-4 districts.

trainings in India. Sessions of these trainings operated mostly according to the plan at the time of appraisal.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The total project cost planned was 13,618 million yen, and the Japanese ODA loan was 9,818 million yen. The executing agency was responsible for 3,800 million yen. The actual total project expense was 13,198 million yen, but it was impossible to obtain separate information for foreign and local currencies. The actual total amount of the Japanese ODA loan was 9,129 million yen;[37] which was 93% of the planned Japanese ODA loan of 9,818 million yen. The total project cost was planned to be 13,618 million yen, and the actual was 13,198 million yen (97%), which was within the plan.

Comparison of the breakdown of the plan and actual shows that those portions of the ODA loan stipulated for livelihood improvement activities, physical contingency, and interest were unused. In addition, fluctuations in currency exchange practically reduced the cost.

The allocation by the executing agency was 3,800 million yen at the time of appraisal, but it came to 4,069 million yen (107%). For afforestation activities, 55 million yen was newly allocated. Therefore, more afforestation and supplementary planting were performed than planned. The 5 million yen surplus was spent on income improvement activities.

Table 5 Comparison of Plan and Actual Related with Project Expenses (unit: million yen)

	Plan		Actual	
Items	ODA Loan	Paid by the Executing Agency Note 1)	ODA Loan	Paid by the Executing Agency Note 2)
Afforestation	4,975	0	5,270	55
Livelihood Improvement Activities	1,929	0	1,871	5
Strengthening Forest Management Capacity	1,543	0	1,641	143
Price Escalation	517	0	0	0
Physical Contingency	448	0	0	0
Tax	0	4	0	0
General Management	0	3,796	0	3,866
Interest Rate during Construction	406	0	347	0
Total	9,818	3,800	9,129	4,069
Total Project Budget	13,618		13,198	

Source: Materials provided by JICA. Responses from the executing agency.

Note 1) Currency exchange rate: US$ 1 = 109 yen, local currency 1 rupee = 2.40 yen. Rate of price escalation: foreign currency 1.4%/year, and local currency 1.8%/year. Physical contingency rate: 5.0%. Cost estimation period: August 2004.

Note 2) Currency exchange rate: (actual) US$ 1 = 100.1 yen (March 2005 to March 2013 average exchange rate), local currency 1 rupee = 2.15 yen (March 2005 to March 2013 average exchange rate).

[37] Responses to the executing agency questionnaire. Document(s) provided by JICA.

3.2.2.2 Project Period

The project duration was 97 months, from March 2005 (L/A signing) to March 2013 as planned. The definition of completion was not described in the official documents. However, based on the materials provided by JICA and the testimonies of related stakeholders, the definition of completion was assumed to be the completion of the activities of afforestation, seedling planting and plantation maintenance activities, livelihood improvement activities, and strengthening forest management capacity.

Table 6 Comparison of Plan and Actual with Project Duration

	Plan	Duration (months) Note 1)	Actual	Duration (months) Note 1)
■ Afforestation				
Tree Planting	2005/4 - 2010/3	60	2005/4 - 2009/3	48
Supplementary Planting	2006/3 - 2013/3	85	2006/4 - 2013/3	84
■ Livelihood Improvement Activities	2005/4 - 2013/4	97	2005/4 - 2013/3	96
■Strengthening of Forest Management Capacity				
Monitoring and Evaluation	2005/4 - 2013/2	95	2005/4 - 2013/3	96
Training	2005/3 - 2009/3	49	2005/4 - 2009/3	48
Expansion of the GIS System	2005/4 - 2010/3	60	2005/4 - 2013/3	96

Source: Materials provided by JICA. Responses from the executing.
Note 1) Rounded.

3.2.3 Results of Calculations Internal Rate of Return (Reference Only)

Financial internal rate of return and economic internal rate of return of the afforestation project were calculated by external experts at the time of the appraisal, and calculated items, such as profit, were in accordance with calculation methods at the time of appraisal. As for environmental impacts, the figures were calculated following the estimation items used by external experts.

Table 7 Internal Rate of Return of Project

	Financial Internal Rate of Return (FIRR)	Economic Internal Rate of Return (EIRR)
At Appraisal	1.3%	11.6%
At Ex-Post Evaluation	1.1%	11.9%
Cost	Afforestation and soil conservation, forest management, improvement of the Forest Department infrastructure, extension and training, maintenance management cost	Afforestation and soil conservation, forest management, improvement of the Forest Department infrastructure, extension and training, maintenance management cost
Benefits	Sales income from forest products	Increase in forest products, water source protection, agricultural profits, environmental impacts
Project Life	30 years	30 years

Source: Materials provided by JICA. Responses from the executing agency.
Note) At planning, the project cost is calculated without accounting for any increase in prices; thus, the present calculation does not include such increases either.

The financial internal rate of return was 1.1% since the profit allocation ratio of the Forest Department and VFC keeps profits small. The economic internal rate of return shows an increase in the project expenses compared to the time of appraisal since it was calculated in the local

currency, and the total maintenance management required also increased. As profits, agricultural profits are expected through water source conservation and soil and moisture conservation, leading to an economic internal rate of return of 11.9%.

As the described above, the project cost and duration remained within the plan limits. The efficiency is high.

3.3 Effectiveness and Impacts (Rating:③)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

3.3.1.1 Afforestation Area, Number of Seedlings Planted, and Survival Rate (Operation Indicators)

As seen in Table 8, the afforestation area and the number of seedlings planted in the project mostly met the goal as shown by the indicators.

Table 8 Comparison of the Afforestation Plan and Actual for Target Villages

Indicator Name	Target (2015)	Actual (2015)	Level of Achievement
	2 years after project completion	2 years after project completion	
Afforestation Area (ha)	177,500	208,550 Note 1)	118 %
Seedlings Planted (No.)	34,150,825	39,991,825	117 %
Seedlings Planted in Supplementary Planting (No.)	6,550,000	9,808,682 Note 2)	150 %

Source: Ex-ante evaluation sheet, materials provided report, and responses to the executing agency questionnaire.
Note 1) The target was exceeded because of funds from the executing agency allowing for 31,050 ha of afforestation.
Note 2) The number of seedlings that died or were damaged within two years of afforestation were replaced. The number of seedlings planted in supplementary planting with the funding by the executing agency was 2,356,806.

The survival rate of planted trees is an important indicator that confirms the effectiveness of afforestation, but such an indicator was not set at the time of the appraisal. In the ex-post evaluation, we use it as one of the alternative indicators to confirm effectiveness. It was 70% in 2015, meaning growing conditions after afforestation has been favorable.

Table 9 Actual Survival Rate of Planted Trees in Target Villages Note 1) (Alternative Indicator)

Program Name	2015（Actual）
	2 years after project completion
IWDP	69 %
ITDP	71 %

Source: Responses to the executing agency questionnaire.
Note 1) Trees planted as part of supplementary afforestation are counted in the survival rate. The five-year survival rate of planted trees was determined to be an important indicator from an expert viewpoint by the executing agency. Since afforestation began in April 2005 and ended in March 2009, the survival rate in 2015 was obtained through the executing agency.

3.3.1.2 Changes in Forest Cover Rate and Crown Density in Target Districts (Reference Indicator)

At the time of appraisal, it was assumed that the change in crown density of the afforestation target area would be examined as follows.

Table 10 Target Values Related with Crown Density (At Appraisal)

Indicator	Target Value(2019)
	6 years after completion of project
Crown Density	Scrub (less than 0.1) →Open forest (0.1 or over 0.1‐less than 0.4)
	Open forest →Dense forest (less than 0.4)
	Dense forest → Dense forest with higher crown density[note1)]

Source: Ex-ante Evaluation Sheet of the project. Materials provided by JICA
Note1) Describe the description of the materials provided by JICA at appraisal as it is.

Target values related with crown density were set as per Table 10 according to the Ex-ante Evaluation Sheet and the plan at the time of appraisal. However, the changes in crown density of the target afforestation area or surrounding forests could not be obtained even by satellite data.

The evaluator used two indicators such as "forest cover rate in IWDP target districts" and "changes in the area by crown density in IWDP target districts" only as reference indicators for evaluation and did not consider them in sub-rating judgement. The reason for that is as follows. For example, Table 11 shows the forest cover rate of IWDP target districts which was cited from the *India State of Forest Report*. However, it is calculated from satellite data in which the factors such as loss of forests due to urbanization and the 2004 Indian Ocean Tsunami, commercial plantation not related with this project, the agricultural crops that appear as forests from the satellite, and decrease in the burden on forests owing to LPG distribution are not comprehensively investigated and adjusted in the data.

Table 11 Forest Cover Rate in IWDP Target Districts[38] (Reference Indicator)

Indicator	Plan (2005)	Actual (2015)
	At start	2 years after completion of project
Forest Cover Rate	18.3%	22.9%

Source: *India State of Forest Report*

Table 12 also shows changes in crown density in IWDP target districts. The data shows scrub decreased, and open and dense forests increased in IWDP target districts at the time of 2015. However it is not possible to measure the effects on afforested plantations only by this project. Therefore, the changes in crown density is regarded as a reference indicator and is not used for the evaluation.

Table 12 Changes in Area by Crown Density in IWDP Target Districts Note 1) (Reference Indicator)

Indicator		Plan (2005)	Actual (2015)	Change in Area, %
		At start	2 years after completion of project	
Classification by Crown Cover	Scrub	177,700 ha	40,900 ha	1.6 % ⇒ 0.4 %
	Open Forest	9,404 ha	11,345 ha	0.08 %⇒ 0.10 %
	Dense Forest Note 2)	1,076,900 ha	1,163,900 ha	9.8 % ⇒ 10.6 %

Source: *India State of Forest Report*
Note 1) IWDP target district area: 11,016,000 km^2 = 111,016,000 ha. This is the area of IWDP target districts at the time of the plan. Administratively, districts are divided into two, increasing the numbers. These new districts are included in the count.
Note 2) Dense forest referred to the crown rate of ≥0.4 at the time of the appraisal but by the ex-post evaluation, dense forests were sub-divided. According to crown rate, ≥0.4 to <0.7 is called Moderately Dense Forest, and ≥0.7% is called Very Dense Forest. In this report the evaluator refer to both classifications of dense forests.

[38] At the ex-post evaluation, 25 out of 30 districts in the state were IWDP target districts.

Though it is a reference indicator which is not reflexed in the evaluation, when comparing the change in the ratio of forest in IWDP target districts, scrub would not be included as forests based on the definition of forests; thus, if comparing the overall area of forests, the evaluator compared the changes by combining open forest with dense forest. Changes in forest areas are shown in Table 13.

Table 13 Changes in Forest Area in IWDP Target Districts (Reference Indicator)

Indicator		Plan (2005)	Actual (2015)	Change in Area, %
		At start	2 years after completion of project	
Forest Area	Open Forest	9,404 ha	11,345 ha	0.08 % ⇒ 0.10 %
	Dense Forest	1,076,900 ha	1,163,900 ha	9.8 % ⇒ 10.6 %
Total		1,086,304 ha	1,175,245 ha	9.9% ⇒ 10.7%

Source: *India State of Forest Report*

3.3.1.3 Improved Effects on the Standard of Living

Improved effects on the standard of living of residents in target VFC by the project were qualitatively confirmed, as will be discussed later. It was difficult to quantitatively measure the improvements since it is impossible to identify what kind of factors contributed the improvement of standard of living. It is not clear whether or not they are these improvements brought by this project, income improvement due to increase of regional gross production due to economic growth, or income increase from household member's employment in neighboring cities. The goal set at the time of the appraisal was a 10% increase in household income for farmers in target villages,[39]but according to Table 14, though there was a change immediately after the start of the project in the annual income in 2015, it was assumed that the 10% increase in household income of farmers of the target villages was achieved, and according to interviews conducted with the concerned parties, improving effects on livelihood through introduction of infrastructure in this project have been confirmed.

Table 14 Changes in Annual Income Right after Start of Project (Reference Indicator)

Program	Target Surveyed Villages	Annual Income Baseline (2005) (unit: rupees)	Annual Income (2015) (unit: rupees)	Rate of Increase (%)
IWDP (less than 0.4)[note)]	35	12,649	19,076	51
IWDP (0.4 or over 0.4– less than 0.6)	30	11,899	17,258	45
ITDP	15	13,138	17,156	31

Source: *Terminal Evaluation Study of the Tamil Nadu Afforestation Project (TAP)-Phase II, 2015*
Note): () indicates crown density

[39] We will discuss issues related to setting the indicators of the standard of living in the "Lessons Learned" section.

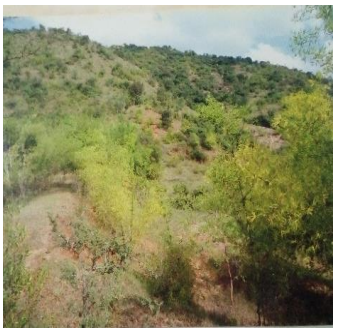
3.3.2 Qualitative Effects

3.3.2.1 Forest Regeneration

The field survey mainly visited sites where afforestation in the scrub area was conducted and forest regeneration was taking place., which was also verified by satellite data.[40] Therefore, the survey sites are not necessarily the representative VFC villages of this project.

In IWDP with small basins, residents of VFC managed livestock appropriately to protect forests,[41] and protected seedlings by prohibiting access to afforestation areas several months after planting in order to promote regeneration of the afforestation areas. When residents discovered forest fires and illegal felling, they were instructed to report this to the Forest Department. As shown in Table 15, LPG was distributed by the state government policies after 2012, which reduced felling of fuel materials and accelerated forest regeneration in the scrub area.

Pudur VFC, Vellore District
Plantation Area, November 2006
(Photograph from a microplan)



Pudur VFC, Vellore District
Plantation Area, November 2012
(Photo provided by the range office)

Pudur VFC, Vellore District
Field Survey, November 2017
(Photo by the evaluator)

Table 15 Fuel for Cooking (unit:%)

Kind of Fuel	2007/08		2012/13	
	Rural	Urban	Rural	Urban
LPG	**14.9**	53.2	**37.7**	72.5
Electricity	0.1	0.1	0.3	0.4
Kerosene	1.7	8.0	1.5	2.8
Wood	**81.6**	36.1	**56.6**	14.9
Other	1.7	2.6	3.9	9.4
Total	100	100	100	100

Source: *Tamil Nadu District Level Household and Facility Survey 2007-08 & 2012-13* （Ministry of Health & Family Welfare, Govt. of India）[42]

[40] The four VFC villages in the Vellore and Tiruvannamalai districts were visited.

[41] The activities include making fodder and leashing cattle to protect forests, and limiting the grazing areas for goats and sheep.

[42] In addition, National Family Health Survey (NFHS-3) India 2005-06: Tamil Nadu; Ministry of Health and Family Welfare, Government of India statistically analyzed fuel materials, but statistical analysis of the household survey at the district level is more consistent with field survey results; thus, the table was prepared on the basis of the household survey at the district level. The latest household survey results at the district level in Tamil Nadu have not yet been published.

3.3.2.2 Improvement in the Standard of Living

In terms of effects of small scale income generation activities by micro credit from VFC to SHG, specific examples of activities and their effects have been reported in the mid-term and final reports prepared by the executing agency. Diverse activities conducted through the use of micro credit included dairy businesses, small scale sale of goods, breeding of goats, management of small shops, leasing of tamarind trees, machine sewing, breeding of sheep, chai shops, load carriage by ox car, sale of Palmyra palm leaves, and sale of fruits, coconuts and so on.[43] As shown in the change of annual income right after the start of the project (Table 14), a certain degree of contribution is recognized to the improvement of household income.

According to results of the interviews conducted in Pudur village and Oorgoundanur village in Vellore district, sources of household income were mushroom cultivation, candle making, incense making, compost making, poultry farming and so on. According to micro credit records of each target village, the debt repayment rate was good for two to three years after the start of the loans, and they were confirmed to be a source of household income. However, subsequent continuous profitability was different depending on fund management by each VFC group.[44] Even in the field survey, the degree of effect that small income generation activities by micro credit had on household income could not be specifically and numerically clarified.

Field surveys conducted in four villages in the Vellore and Tiruvannamalai districts showed that most of the households below the poverty line (BPL) in target villages climbed above the poverty line (APL), but since the state government is supplying products related with household goods and food, and promoting policies on subsidies to raise the standard of living for the poorest, the degree to which this project had an effect on improvement of the standard of living could not be confirmed.

As such, though there are diverse factors contributing to improving the standard of living, it is recognized that impact surveys and field surveys confirmed that annual income of target villages did increase from profits of small scale businesses by micro credit for a certain period. Since the effect of this project on the standard of living exceeds the target value, its effect is judged mostly high.

The planned afforestation was mostly achieved with a good survival rate of planted trees, and forest regeneration was mostly promoted by this project. As for the improvement of standard living, though there exist other factors, in most cases it was limited to a certain period of time, there was an increase in the annual income of target villages due to profits of small scale businesses through micro credit; thus, the effectiveness of this project is high.

3.4 Impacts

3.4.1 Intended Impacts

3.4.1.1 Rise in Ground Water Table and Soil Conservation

The Forest Department surveyed the benchmark water table at the start of this project and

[43] *Socio Economic Studies, Final Report – TAP Phase II, 2011*.
[44] Results of detailed village surveys conducted in the districts of Vellore and Tiruvannamalai.

measured the water table of wells in villages every month until the end of the project. According to the shallow well water table report published in 2011,[45] among 27 villages sampled by climate zones, 24 villages saw an increase in the water table of 1 to 4 meters. The field survey also confirmed that the water table increased by 4.6 m compared to levels at the start of the project.[46] According to interviews with VFC members conducted during the field survey, in these villages, an increased water table allowed the use of shallow wells that were formerly dry. It was confirmed, as a result, the farmers could start using irrigation for agriculture, and that paddy field and upland field increased.[47]

		
Rise in Water Table Level of Shallow Well, Vellore District	Check Dam, Vellore District	Leashed Cattle Tiruvannamalai District

In this project, the pH and soil carbon contained amount were measured before starting of afforestation, but these values were not measured after completion of the project; thus, specific changes in soil could not be compared. According to the field staff of the Forest Department, improvements in water and soil conservation facilities and survival of planted trees suppressed the nutrient outflow of the soil, and preventing soil erosion during rainy seasons.

3.4.1.2 Increased Awareness of Forest Conservation among VFC Residents

Residents contributed to improvement of their natural environment through afforestation and forest conservation activities and received practical benefits like an increased standard of living. This led to residents playing a role in social fencing, in which they monitor illegal grazing, felling, and poaching, through VFC activities.[48]

3.4.1.3 Decreased Number of Forest Fire Incidences

VFC members and neighborhood residents began to employ agricultural methods that prevent fires, and they began to immediately report fires to staff of the Forest Department when they spotted them. This led to a reduction in damages from forest fires.[49] The Forest Department reported that the number of forest fire cases decreased, as shown in Table 16, demonstrating that this project increased the awareness of forest and nature conservation in

[45] *Water Table Status Study Report, 2011*, Geofiny Technologies Private Limited. Please see Appendix 1 for details.
[46] Pudur village in Vellore district.
[47] Results of interviews with VFC members conducted as part of the field survey. Besides, the cases of a remarkable rise in the groundwater level were frequently observed in the cases of IWDP, and a rise in the groundwater level in more than 80% of villages in the lower agricultural land was determined by measurement. (The second field detailed survey results)
[48] Results of the interview conducted with the Vellore District Forest Department staff.
[49] Results of interview conducted with the Vellore District Forest Department staff.

residents.

Table 16 Number of Forest Fire Incidences

Category	Number of Cases (2005)	Number of Cases (2015)
	At start	2 years after completion
IWDP Districts	384	157
ITDP Districts	366	137

Source: Responses to the executing agency questionnaire.

3.4.1.4 Impact on Agriculture／Diversification of Income Acquisition Measures

Surveys conducted in Velleri and Oorgoundanur villages in Vellore district showed that micro credit and revolving funds allowed villages, where much previous income came from cultivation of rice, peanuts, and millet, to begin planting coconuts, cotton, sugar palm, bananas, papayas, flowers, capsicum, beans, and medicinal plants. The number of items planted increased both during the rainy and dry seasons. According to the survey of water tables, usable agricultural water increased due to a rise of water tables; thus, seven out of 27 villages cultivating rice changed from single to double crops.[50] Since irrigation possibilities create more agricultural land, the price of this land increased by two to five times in some VFC villages.

3.4.1.5 Impact on Wildlife

According to the interview survey conducted with VFC members and range office staff of Velleri village in Vellore district, animals and birds become commonly observed in watersheds within afforestation zones as compared to before the project. The wild boars, porcupines, peacocks,[51] and jungle fowl[52] inhabit the watersheds, while slender loris and hare inhibit the forests. According to staff of the Forest Department, although conflicts between humans and wildlife still remain where killing of animals is prohibited in India, there is a positive impact on animal protection.

3.4.1.6 Changes in Social-economic Activities due to Women's Participation in VFC and SHG

According to the interview survey with female VFC members of Darbadpalayam Village in Chengam sub-district of Tiruvannamalai district, women previously never left their homes without permission from their husbands. However, since this project required that one male and one female from each household participated in VFC, participation of women in training to improve livelihood and opportunities to visit towns through SHG activities increased.

There were also reports that women became more active in economic activities such as income improvement and participation in decision-making[53].

In addition, with the improvement of the economic situation in households, it was confirmed by interview survey in the visited VFC villages that the nutritional situation improved[54].

3.4.2 Other Positive and Negative Impacts

3.4.2.1 Impacts on Natural Environment

1) Impact on Environment

In view of sector characteristics, project characteristics, and regional characteristics stipulated in "*JBIC Guidelines for Confirmation of Environmental and Social Considerations*" *(April 2002)*, the undesirable influences on the environment are judged not to be serious.

[50] *Water Table Status Study Report, 2011*, Geofiny Technologies Private Limited.
[51] The peacock is the national bird of India.
[52] These animals are designated as protected animals by the Wildlife Protection Act (1972).
[53] Survey results through group interviews conducted with SHG members who belong to VFC.
[54] Interview results in Pudur village and Oorgoundanur village in Vellore district.

2) Environmental Permits:

This project was not obliged to prepare an environmental impact assessment report based on the Indian domestic law, and no environmental license was required. Since indigenous species were selected for afforestation, it is assumed that there was no additional burden on the natural environment.[55]

3.4.2.2 Resettlement and Land Acquisition

There was no resident relocation or land acquisition through this project.[56]

To evaluate effectiveness and impacts of this project, we weighted among evaluation items such as operation indicators, effective indicators, and impacts by 40%, 40%, and 20%, respectively. Among operation indicator, effect indicator, and impact, indicators that are judged as especially important were attempted to judge evaluations by putting higher weight within each evaluation item.

Table 17 Attempt to Determine Effectiveness and Impacts

Evaluation Items (weight portion)	Indicator Name (items set at the time of appraisal)	Achievement Rate %	Weight within Each Evaluation Item	Results Note 1)	Evaluation Points	Evaluation Points×Weight portion
Operation Indicators (40%)	Afforestation area	118	0.2	3	0.6	
	Number of trees planted	97	0.2	3	0.6	
	The amount of supplementary planting	150	0.2	3	0.6	
	Survival rate of planted trees	Good	0.2	3	0.6	
	Number of VFC (SHG) established Note2)	116	0.1	3	0.3	
	Number of jobs created	123	0.1	3	0.3	
				Evaluation Point in Total	**3.0**	**1.20** Note 3)
Effect Indicators (40%)	Forest regeneration in the afforestation target area	N.A.	0.5	2Note6)	1.0	
	Income per household of farm forestry as target beneficiary (reference indicator)	Achieved in most households	0.5	3	1.5	
				Evaluation Point in Total	**2.5**	**1.00**Note 4)
Impacts (20%)	Water table and soil conservation	Effective	0.2	2	0.4	
	Increased awareness of forest conservation (social fencing)	Effective	0.2	3	0.6	
	Impact on agriculture	Effective	0.1	2	0.2	
	Reduced number of forest fires	Effective	0.1	3	0.2	
	Impact on wildlife	Effective	0.1	3	0.3	
	Diversification of livelihood measures	Effective	0.1	3	0.3	
	Improvement of nutritional standard	Effective	0.1	3	0.3	
	Promotion of women's social participation	Effective	0.1	3	0.3	
				Evaluation Total	**2.6**	**0.52**Note 5)
				Comprehensive Evaluation		**2.72**

Note 1) The criteria was set as follows: "③high: 80% or more of the plan (2.4), ②moderate: 50% or more but less than 80% of the plan (1.5 or higher but less than 2.4), and ①low: less than 50% of the plan (less than 1.5)."
Note 2) Since we were unable to grasp the number of newly established SHG, we measured the achievement rate of VFC.
Note 3) 3.0×0.4 (weight among evaluation items of operation indicators).
Note 4) 3.0×0.4 (weight among evaluation items of effect indicators).
Note 5) 2.4×0.2 (weight among evaluation items of impacts).

As a result of the evaluation of this comprehensive viewpoint, the effectiveness / impact of

[55] Responses to the executing agency questionnaire.
[56] Results of the interview survey with the executing agency.

this project is judged to be high because the overall evaluation score is 2.72, which is 80% (2.4) or more of the plan.

3.5 Sustainability (Rating: ②)

3.5.1 Institutional /Organizational Aspect for Operation and Maintenance

3.5.1.1 State Forest Department

The State Forest Department is the executing agency of this project and performs the maintenance management of afforestation areas and monitoring of the VFC management.

For the monitoring system at the time of the ex-post evaluation, range offices send monthly reports to district offices, circle offices, and state executing units. The monitoring was performed by the circle office with jurisdiction down to the field. Written reports are required monthly according to the regulations, but there are also weekly reports, and most recently, reports can be prepared any time on illegal activities associated with fires and forests using videos and mail through SNS.

The Formulation Evaluation Monitoring and Statistics (FEMAS) was established as an internal monitoring team at the state level, performing field surveys at irregular intervals to confirm current conditions and preparing reports. It surveyed, especially focusing on micro credit and the survival rate of planted trees, and prepares survey reports separately from regular monitoring and reports.

The Forest Department of the Tamil Nadu State takes on all responsibilities of the project activities, and the organizational system has not changed from the appraisal to ex-post evaluation. The division of tasks for each position is clear, and cooperation system from the top level, the Forest Department, to the field level is strong. Close commutations and reports are maintained.

At the ex-post evaluation, the number of staff at the Forest Department was 10,603,[57] but in the future the number is to be reduced due to budget austerity. To cope with this, the Forest Department plans to strengthen the function of VFC as a forest protection agent[58]

Table 18 Stakeholders and Responsibilities &Duties (Actual)

Administrative Level	Responsibilities &Duties	Main Supervisors	Document Report System
The State Forest Department	State-wide Supervision	Principal Chief Conservator of Forest Additional Principal Chief Conservator of Forest	
Circle Offices	Supervision of multiple districts	Chief Conservator of Forest	Quarterly reports to the State Forest Department
District Offices Division Offices Note 1)	In charge of afforestation and forest conservation of overall districts and divisions	Deputy Conservator of Forest Assistant Conservator of Forest	Quarterly reports to the circle offices
Range Offices	In charge of afforestation and forest supervision in the range	Ranger Forester	Monthly report to the division offices
Beat Office Note 2)	In charge of forests across multiple administrative villages (24-hour system)	Forest Guard Watcher	Monthly report to the range offices

Source: Prepared from the results of the interview survey with the Forest Department.
Note 1) One office might play roles of both district and division offices.
Note 2) Beats offices monitor watchers who work in peripheral villages.

[57] Responses to the executing agency questionnaire.
[58] Results of the interview survey with the Forest Department.

3.5.1.2 VFC

VFC are an organization based on the Tamil Nadu Society Act as described above and are audited every year. Five to 15 at maximum members are selected for the executive committee of VFC, and one male and one female shall be selected from the same village. The term of each committee member is five years, and the same member can be elected up to two terms. The executive committee holds a meeting every month, and VFC members hold one meeting every quarter on principle. Members attend one meeting every six months. Topics of VFC meetings include allocation and recovery of loans, afforestation, prevention measures of livestock entering forests, and so on. At the time of ex-post evaluation, a microplan was being renewed.

Regarding the revolving fund, when averaging the data submitted from each circle at the time of the ex-post evaluation, the repayment rate of micro credit was 78% and the revolving rate of micro credit funds was 2.45 times.[59]

The surplus of the revolving fund[60] is being used as the village forest fund for welfare of VFC villages (educational fund support, infrastructure repairs in villages, etc.).[61]

Since VFC are in a position as society, the Forest Department has a plan to establish a federation so that members would be able to trade Non-Timber Forest Products (NTFP) such as fruits, spices, fiber, resin, and so on, at the scale of a larger organization, and to act collectively.

3.5.1.3 SHG

SHG organizations consist of 15 to 20 members. Reasons for inability to repay the micro credit included a lack of money due to issues of income, high interest, and intentionally not paying since there were other members who were not repaying, in hopes that the loan might be cancelled.[62] At the time of ex-post evaluation, the evaluator were unable to confirm the ratio of SHG that were continuing income generating activities.[63]

In relation to the organizational activity system of VFC and activities of SHG at the time of ex-post evaluation, since there are various cases as to the actual condition of micro credit, and there are cases in which it is at least financially dormant there remain issues. The system of operation and maintenance at each level of the executing agency is established. Therefore it is judged that there is almost no problem.

3.5.2 Technical Aspect of Operation and Maintenance

In terms of technical knowledge of Forest Department staff, training was provided to suit individual levels to strengthen technical and management skills of staff.[64] Training assessments were conducted to implement training, and based on such assessments, specialized agencies developed educational materials and provide actual training. According to interviews conducted at each level of office in the Forest Department, management of resident participation and micro

[59] The revolving ratio is the ratio of the total amount of refinancing amount to the amount of funds created.
[60] Surplus funds of a certain amount not used for micro credit.
[61] Responses to the executing agency questionnaire.
[62] *Tamil Nadu Afforestation Project, Socio Economic Studies, Final Report – Phase 2 by Economic Perspectives*. Information from VFC members of 27 villages through proportional sampling of climate zones.
[63] Responses to the executing agency questionnaire. SHG formed by this project (SHG of VFC) has been formed. There are also SHG which has dissolved due to the difficulty of fund management and business ups and downs, but there are also SHG which is continuing. In addition, SHG formed by other projects may be permitted to newly enter the lending of this project, and these SHGs are formed separately by age group, caste class, residential area, etc. These SHGs, which is not SHG of VFC, may be continued in some cases. Even in the visited village, the evaluator could not grasp the total number of SHG.
[64] The result of the interview survey with the executing agency staff.

credit was performed with the corporation of NGO in relation to guidance and facilitations, by instructing activities of VFC with NGO, the Forest Department staff had an opportunity to have conversations with local residents and gained an attitude of encouragement to facilitate participation in VFC[65]. Manuals below were prepared through this project and were used in the training described above:

・*A comprehensive training manual on gender mainstreaming, micro finance and micro credit, and poverty alleviation*

・*Training Manual for the Trainers' Training Program*

TBGP uses these manuals prepared for TBGP.

In Phase I, the forest area where afforestation was done in extensive areas, so intensive care was not given for planting trees. Given that, Phase II training provides detailed and practical contents, such as handling and planting of seedlings and prevention of livestock and people from entering forests after planting, allowing for learning more concrete implementation methods of JFM.[66] The Tamil Nadu Forest Academy has prepared and organized manuals for afforestation and forest conservation, and provides training of trainers (TOT) according to the level of knowledge and technical skills of individual staff. Since Phase I and the present project have been continuously executed for about 20 years, field staff were mostly aware of forest management techniques that focused on residents and developed a good relationship with VFC in terms of forest management. Therefore, there is no technical problem with operation and maintenance of afforestation.[67]

3.5.3 Financial Aspect of Operation and Maintenance

3.5.3.1 The State Forest Department

The finance of the State Forest Department is made of fixed cost and personnel cost from the state government, state government project cost, central government project cost, and state/central government joint project cost. With the austerity finance, personnel cost is scheduled to be reduced. Other project costs were being reduced every year, as well, and the total budget was decreasing. Since the number of field staff in charge in the Forest Department was to be reduced, a policy was set up to enhance VFC instead of relying on the Forest Department. A budget of 98,495,000 rupees was set aside for this purpose for the 2017-2018 fiscal year.

Table 19 Annual Budget Status of the State Forest Department Note 1) (unit: 100,000 rupees (lakhs Rs))

	2014/15	2015/16	2016/17	2017/18Note 2)
Fixed Cost/Personnel Cost Note 3)	35,508.97	42,744.45	43,134.53	33,924.44
State Government Project Cost	26,479.03	19,293.43	13,579.08	13,049.15
Central Government Project Cost	2,184.62	3,070.95	2,452.94	3,497.55
State/Central Government Project Cost	820.03	1,610.85	1,294.91	1,355.51
Total	64,992.65	66,719.68	60,461.46	51,826.65

Source: The State Forest Department.
Note 1) The Indian fiscal year is from April to the next year March.
Note 2) Requested budget for 2017/2018.
Note 3) Materials provided by the state government.

[65] The result of interviews with the Forest Department staff.
[66] The result of interview survey with Forest Department staff.
[67] The result of interview survey with Forest Department staff.

Table 20 Maintenance Budget Secured for Project (FY 2017/2018) (Unit: 100000 rupees (lakhs Rs))

Details	2017/18
[Strengthening of JFM Organization for Phase 1 and this Project] ・Organization of federation that includes expansion of VFC office functions. ・Preparation of updated microplan.	318.70
[Increasing NTFP Profits] ・Survey on NTFP and medicinal plant resources, a management plan that is linked to the market. ・The marketing department was established in the Forestry Extension Center, and NTFP resources are managed and utilized.	87.00
[Maintenance of Community Assets] ・Repair to check dams and percolation ponds built in this project.	579.25
Total	984.95

Source: Responses to the executing agency questionnaire.

The allocation of profits (actual) was the same as that assumed at the appraisal, according to the allocation principle shown in Table 21. Since planted trees were young, except for thinned wood from some trees and green leaves after pruning, there was hardly profit from planted trees yet. Regarding the collection of NTFP, permission was supposed to be issued based on judgment of the forest situation by the range office, but it was confirmed that some VFC villages collected NTFP.

Table 21Allocation of Benefits between the Forest Department and VFC (Policy) (unit: %)

Items	Forest Department	VFC
Fuel Wood	0	100
Livestock Feed, Green Leaf Manure	0	100
Timber	10	90
Poles, Bamboo	10	90
Non-Timber Forest Product(NTFP)	0	100

Source: Responses to the executing agency questionnaire.

3.5.3.2 VFC

VFCs were being audited every year based on the Tamil Nadu Society Act. As discussed above, regarding the revolving fund, the repayment rate of micro credit was 78% and the revolving rate of small funds was 2.45 times, based on the average of documents submitted from each circle office at the time of ex-post evaluation.[68]

The surplus of the revolving fund was being used for welfare of VFC villages as village forest funds (education support, repair of village infrastructure, etc.), but some VFC defaulted funds due to non-payment from SHG or individuals, which became dormant funds at a bank.[69]

The Forest Department, considering future financial sustainability, made a plan that allows for establishment of a federation and collective activities, so that VFCs that play a role in society can trade NTFP as a larger organization. This plan will allow members of VFCs to routinely receive profits after a certain period. The measures are being considered including the option that VFCs can trade nuts, oil (wax, lacquer, etc.), medicinal trees and herbs, bamboo materials, vines, tree barks, and saps jointly without a commodity broker so that they can receive practical

[68] Results of the executing agency's questionnaire.
[69] Results of the field survey interview.

profits when trees grow and mature.[70]

As mentioned above, although the staff tends to be reduced due to austerity finance as the budget of the State Forest Department, in response to the decline of the staff who supervises the on-site, a policy was set up for VFC staff to take over monitoring by strengthening the role of the VFC, and a budget was put aside for this purpose. However, there were some issues with the financial sustainability of VFC, and the State Forest Department was attempting to strengthen their finances by forming a federation and increasing profit from NTFP. Though issues remained, since the Forest Department understood the issues and was searching for solutions, financial sustainability is considered moderate.

3.5.4 Status of Operation and Maintenance

Each division office was supposed to conduct management and maintenance of afforestation areas based on the working plan.[71] For VFC, microplans were formulated with residents in the beginning, but at the time of the ex-post evaluation, NGOs were appointed to follow up on the project, and microplans were being renewed jointly with VFC.

Seedlings that died or were injured within two years of planting were replaced in the supplementary planting. Watering depended on the amount of precipitation in the community, but was usually performed continuously for three months following planting and supplementary planting. For three months after the planting of trees, access to afforestation areas was prohibited. Since afforestation areas required professional protective surveillance, watchmen of the Forest Department cooperated with forest guards to conduct 24-hour monitoring. These staff and those of range offices corresponded to the protection and control of pests.

The Forestry Extension Center was being used for training in afforestation and compost making for farmers and residents as part of the present project of TBGP, and there is a budget put aside to reinforce the facility building.

Soil and moisture conservation facilities were being repaired by the Forest Department. For repair of small infrastructure facilities by other departments, VFC applied for the departments in charge and requested for repair.[72]

During Phase 1, a forest cover rate map was prepared, which clearly displayed reforestation and reduction of forest, showing issues for each district. In this project, a map of forest types was prepared, and another map was created to show forest vegetation across the state. Though not for this project specifically, a geographical map of forest fire conditions was also developed, which can be confirmed on the Geomatic Center page of the state Forest Department website.

In light of the above, duties and roles for positions that perform maintenance of afforestation are clear, and a collaboration system is established from the Forest Department Headquarters to the field. From a technical perspective, training is provided according to needs, and technical skills required for each task are being strengthened. From a financial perspective, although the

[70] The assumption on how many years later NTFP will be harvested depends on the type and growth situation of NTFP.

[71] The project plan was approved for 10 years of forest conservation, plant regeneration, and tree planting by the state Forest Department after its approval by circle offices.

[72] A report to the executing agency is not required for repairing village infrastructure; thus, we were unable to understand the present condition of facilities and their state of repair (responses by the executing agency).

staff of the forestry department tends to be reduced, by strengthening the VFC, the budget is secured so that the forest preservation policy can be continued without delay. Budgets are also secured by state government that emphasizes forest preservation. The income improvement activities of SHG are conducted by funds provided by the VFC Fund and the VFC Fund remains as issues. The situation of management related to forests and afforestation is almost favorable. Judging comprehensively, the sustainability is high.

4. Conclusions, Lessons Learned, and Recommendations

4.1 Conclusions

This project was implemented with the aim to regenerate forests and improve the standard of living of local residents by afforestation and livelihood improvement activities using the community participatory method at the village level in the state of Tamil Nadu in the south-east of India, thereby contributing to the improvement of the local socio-economic situation.

This project is highly relevant, as it is consistent with priority areas in the development policy of India's and Japan's ODA policy, and also with development needs. The efficiency is high, as its cost and duration were within the plan. The afforestation was implemented mostly according to the plan, with a high survival rate of planted trees and forest regenerated. In addition, it is recognized that the annual income of the targeted villages has increased because of income gained from small scale business using micro credit implemented through this project at least for a certain period. Therefore, the effectiveness is high. The rise of the groundwater level has been confirmed by survival of planted trees and improvements of the soil conservation facilities, and the impact such as the diversification of the cropping items emerged. Residents' awareness of forest protection and nature conservation also increased, forest fires decreased, and trees are being protected through appropriate management of livestock. Social fencing, which monitors illegal grazing and felling trees, has also been established. As such, the effectiveness and impact of the project are both judged as high. The operation and maintenance system of the executing agency is well established; there is no problem with technical capabilities and the project is mostly maintained. Although there are a few issues remaining with the financial sustainability of village forest councils, the sustainability of the effects emerged by this project is high.

In light of the above, the evaluation result of this project is highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations for the Executing Agency

None.

4.2.2 Recommendations for JICA

None.

4.3 Lessons Learned

<u>Setting Appropriate Effectiveness Indicators</u>

Effectiveness indicators was set "forest cover rate (crown density) in the afforestation target area" at the time of the appraisal of this project according to JICA provided materials. However, the forest cover rate and the crown rate were monitored only at the district unit and the effect

emergence could not be sufficiently confirmed. It is desirable to accurately represent the effectiveness of the project objectives and to set indicators that can be monitored by the executing agency.

As the indicators on living standards, at the time of appraisal, an income increase by 10% for target households on average was set as a target to be achieved two years after completion of the project. However, there are other factors affecting on the increase other than the project. At the time of appraisal it was required to set the indicator properly (considering other influencing factors) and to clearly indicate the measurement method.

For the appropriate ex-post evaluation, the validity of operation and effect indicators should be discussed at the time of the appraisal with experts and measurement methods for indicators should be clarified. It is important to keep records on those indicators and the measurement methods in the agreement document at appraisal. Since the target indicators for the effectiveness are also referred for monitoring during implementation and post-monitoring and are keys to overall project management, the sufficient and appropriate investigation of those indicators by stakeholders at the time of planning and appraisal is required.

Financial and Organizational Sustainability of VFC and Necessity to Examine Future Direction of JFM.

In this project, with the support of the Forest Department and NGOs, a VFC consisting of settlements living around afforested areas was formed and most of VFCs consisted of the settlements include SC and ST. VFC was formed on condition that it was affected by living and agriculture due to deforestation and deforestation of forests. Though VFC is an organization based on the Society Act, at the time of ex-post evaluation, it is planned to upgrade VFC as a part of administrative organization in the administrative village, and establish a VFC federation in order to sell forest products and non-timber forest products etc. Such a plan to strengthen VFC institutionally and financially is proposed by the Executive Agency.

At the time of ex-post evaluation, economic status had changed notably, compared to 10 years ago when VFC were established. A rapid economic growth of the state of Tamil Nadu activated seasonal labor and migrant labor, leading to VFC in which members are absent for a long period of time. In addition to profits from forests and micro credit, income from migrant labor of family members makes up a large portion of household income. Micro credit is at a turning point in which their value must be further examined through future surveys. This evaluation did not make specific and empirical comparisons of these micro credit with those of other organizations. However, since the repayment rate of micro credit is low, and some VFC and SHG are dormant, considering the future direction of JFM, micro credit that had previously been an incentive to residents must be reconsidered. While doing so, some members of target villages in Tamil Nadu were utilizing micro credit from NGOs. The amount of loans are large and the repayment rate is also high with the framework of this loan under strict regulations. Thus, it would be necessary to make a comparative examination on micro credit with those of the other organizations.

Comparison of the Original and Actual Scope of the Project

Items	Plan	Actual
1.Project Outputs	(1) Afforestation project 1) Afforestation area IWDP 162,500 ha ITDP 15,000 ha 2) Number of trees planted 34,150,825 3) Number of supplementary trees planted 6,550,000 4) Number of Employers (day/number of people) 16,590,000 5) Soil and moisture conservation activities a. check dams 4,152 b. percolation ponds 1,177 (2) Number of VFC established 800 (3) Number of SHG established 1,600 (4) Community development water tanks, roads, VFC offices, etc. 3,657 (5) Forest management facilities 1) Field staff dorms 575 2) Field staff offices 61 3) Rest Houses 29 (6) Forestry Extension Center 11 (7) GIS 1) GPS 300 2) Computers for training 6 3) Topographic data purchased 22 4) GIS software 13	(1) Afforestation projects 1) Afforestation area IWDP 189,250 ha ITDP 19,300 ha 2) Number of trees planted 39,991,825 3) Number of supplementary trees planted 9,808,682 4) Number of Employers (day/number of people) 20,440,000 5) Soil and moisture conservation activities a. check dams 5,271 b. percolation ponds 2,026 (2) Number of VFC established 950 (3) Number of SHG established 3,283 (4) Community development water tanks, roads, VFC offices, etc. 4,393 (5) Forest management facilities 1) Field staff dorms 575 2) Field staff offices 61 3) Rest Houses 29 (6) Forestry Extension Center 11 (7) GIS 1) GPS 329 2) Computers for training 6 3) Topographic data purchased 23 4) GIS software 15
2.Project Duration	March 2005–March 2013 (97 months)	March 2005–March 2013 (97 months)
3.Project Cost Foreign Currency Local Currency Total (ODA Loan) Exchange Rate	450 million yen 13,169 million yen (5,487 million rupees) 13,619 million yen 9,818 million yen 1 rupee ＝2.40 yen (August 2004)	(N/A) (N/A) (N/A) 13,198 million yen 9,199 million yen 1 rupee ＝2.15 yen (average from March 2005 to March 2013)
4.Final Disbursement	July 2015	

Appendix 1. Water Table Data

Climate zone	Annual mean precipitation (2006-2010)	Name of villages	Rise in water table
Cauvery Delta Zone	696 mm	Osarapalli Nagar Mahilampadi Kancherimalai	4 m 1 – 2 m 1 – 2 m
North Eastern Zone	882 mm	Kumaramangalam 3 Villages Keel Kottaiyur	3 m 1 m 0
North Western Zone	844 mm	Kollankuttai Paithur Pappanaikkanpatti Chinnerikkadu Kalrampatti	3 m 3 m 1 m 1 m 0
High Altitude Zone	813 mm	Beeranapalli Achampatti	3 m 1 m
Western Zone	844 mm	Goundanpalayam Pudukkadu Indiranagar Masagoundanur Masakalipatti Periyakalipatti	3 m 1 m 1 m 0 0
Southern Zone	990 mm	Chinamuliyur Pillayarnatham Tkolingipatti Karuppanadhi Palayar Kudiyiruppu TNadar Sanga Theru Rajapalayam Samathuvapuram	3 m 1 m 1 m 1 m 1 m 1 m
High Rainfall Zone	1,986 mm	Vellambi	1 m
		Total number of villages, 27	The number of villages that experienced rise, 24

Source: *Water Table Status Study Report, 2011*

Note) Water tables in 135 wells in 27 villages were measured every month. The sampling method of 27 villages was not clearly stated in the report.

SF2/20912/2021

044595

ABSTRACT

Forests - "Green Tamil Nadu Mission" - Administrative and Financial Sanction for implementation during the year 2021–2022– Orders issued.

Environment, Climate Change and Forests (FR-6) Department

G.O.(Ms)No.126

Dated: 09.12.2021
திருவள்ளுவர் ஆண்டு-2052
பிலவ, கார்த்திகை-23
Read:

1. From the Principal Chief Conservator of Forests (Head of Department), Chennai, Ref.No.SF2/20912/2021, dated 06.10.2021.

2. Government Order (Ms) No.154, Agriculture and Farmers Welfare (AP5) Department, dated 22.10.2021.

*****

Order:

Forests and Trees are essential for sustaining life on our planet. Forests and Trees contribute to food security, sustainable agriculture protection of biodiversity, sustainable livelihoods and economic prosperity. Forests and Trees are important carbon sinks and have a central role to play in meeting the challenge of climate change.

2. Increasing Forest and Tree cover is important to ecology and economy as a viable nature-based solution which will aid in mitigating adverse impact of climate change. Extreme weather events in the recent past have increased, leading to large scale devastation along coasts, urban settlements, farmlands, forests, and grasslands impacting life, property and biodiversity. There is a need to arrest these and mitigate the impact of these events.

3. Trees are nature's climate solution and play an important role in climate change management. Though, tree planting is not the only solution, enhancing forest cover is undoubtedly the single most important intervention for a sustainable clean and green future. Tree plantations have been a vital source of fuel, fibre, food, fodder and timber, providing an important buffer during times of crop losses due to pests or extreme weather incidents. Agro forestry has contributed greatly to the resilience of farms and farmers. Trees beyond forests will aid and support carbon storage, reduce pressure on forest resources while meeting the needs of humanity.

4. The State of Tamil Nadu intends to sustainably manage its forest and tree cover recognising it's key role in climate change adaptation and mitigation. The State plans to augment the national efforts in creating the additional carbon sink of 2.5 to 3 billion tonnes in its forest and tree cover by the year 2030 as a part of its Nationally Determined Contribution (NDC) commitments under the Paris Agreement by adopting two-pronged strategy as below:

(i) Forest land restoration by encouraging planting of indigenous/native species which locally adapt to rainfall and temperature extremes and promote biodiversity, critical in addressing the concerns of climate change.

(ii) Increasing Tree cover outside conventional forests for climate change adaptation and mitigation and for improving income opportunities of farming communities, by actively promoting agro forestry.

5. Accordingly, the Honourable Finance Minister, while presenting the Revised Budget for 2021-2022, made an Announcement on the floor of Tamil Nadu Legislative Assembly on 13.08.2021 that "under the leadership of the Hon'ble Chief Minister, this Government will launch the Green Tamil Nadu Mission with the objective to increase the Forest and Tree Cover in the State from present 23.8% to 33% of the geographical area of the State by the year 2030-2031 as per the Vision of the Government of Tamil Nadu".

6. In consonance with the aforementioned announcement, Government orders are issued for the launch of "Green Tamil Nadu Mission" with following objectives:

i) Increase the Forest and Tree Cover in the State from present 23.8% to 33% by the year 2030-2031 as per the National Forest Policy, 1988 and Vision of the Government of Tamil Nadu, through Afforestation activities on the degraded forest landscape and tree planting activities outside the forest areas.

ii) Expand tree cover on farmlands to complement agricultural crops. Build a robust data base on farmers and the growing stock in their land for developing a strong institutional marketing linkage for tree growers to enhance income opportunities.

iii) Improving growing stock and biodiversity in the State of Tamil Nadu through community-public-private participation (CPP Mode).

7. Under this Mission, 265 crores seedlings of native trees of economic and ecological significance will be planted over a period of10 years on suitable public lands like Urban areas, Farms, Educational Institutions, Temple grounds, Sacred Groves, Industrial Areas, Tank Foreshore, Padugai areas, areas under the control of Defence and Police establishments etc., covering an area of about 13,500 sq.km. Utmost care will be taken to ensure that suitable tree species with optimum growth are planted considering edaphic and climate conditions of the site. This will ensure optimum survival after planting. Planting of non-native species,

tree planting drives on grasslands and wetlands, and promotion of monoculture will be discouraged. The details of area coverage is given in the Table 1.

Table 1

Sl. No	Targeted area	Area in Sq. km	% of Land Area
i.	Total geographical area of Tamil Nadu	1,30,060	-
ii.	Current forest and tree cover	31,194.02	23.98
iii.	Targeted forest and tree cover	42,919.80	33.00
iv.	Area under Forest and Tree Cover to be covered to achieve 33% of total geographical area with various plantation models.	**13,500.00**	**9.015**

8. Under the "Green Tamil Nadu Mission", the role of Agroforestry would be instrumental in getting closer to the objectives of achieving 33% geographical area under Forest and the Tree cover as per the National Forest Policy, 1988 and the vision of the Government for which the Government of India has already issued the Operational Guidelines under the National Mission for Sustainable Agriculture (NMSA).

9. The adverse impact of climate change will be felt more strongly in coastal and inland areas of the State causing changes in frequency and intensity of storms, increase in temperature and precipitation, sea level rise, shoreline erosion, droughts, inundation of urban and rural areas and increased salinity leading to depletion of availability of freshwater. In order to manage the impact of climate change, the Government have already announced two other Missions viz., Tamil Nadu Climate Change Mission and the Tamil Nadu Wetlands Mission in addition to Green Tamil Nadu Mission.

10. For effective management of the above three Missions and to ensure that they achieve their underlying objectives, the Government have also created a new Special Purpose Vehicle (SPV) viz., Tamil Nadu Green Climate Company (TNGCC) which in turn shall setup a specialized Project Management Unit (PMU) for coordinating and monitoring of project activities in partnership with the Tamil Nadu Infrastructure Fund Management Corporation Limited (TNIFMC).

11. Under the Green Tamil Nadu Mission, the target for raising and planting of the seedlings for the year 2021-2022 has been proposed as 1.20 crore. The Forest Department has already raised 73 lakhs seedlings for implementation of "Tamil Nadu Mission on Sustainable Green Cover in Farmlands" as part of National Mission on Sustainable Agriculture. In addition to the above, about 47 lakhs seedlings have to be raised and planted during the current financial year 2021-2022 at a cost of Rs.21.00 crore.

12. The Government accord administrative and financial sanction for Rs. 21.00 crore (Rupees Twenty one crore only) for raising and planting of 47 lakhs seedlings in the current financial year (2021-2022). The Government also accord administrative and financial sanction for Rs.17.80 crore (Rupees Seventeen crore and Eighty lakhs only) for raising nursery of 130 lakhs seedlings for planting during next financial year (2022 – 2023). The details are shown in Table 2.

Table 2

Year	Area (in ha.)	No. of seedlings (in lakhs)	Amount Sanctioned now (Rs. in crore)
2021-2022	5,000	47	Rs.21.00 (Raising of nurseries and planting during 2021-2022)
2022-2023	5,000	130	Rs.17.80 (Raising of nurseries for planting during 2022-2023)

13. The source of the funding to meet the above expenditure for successful implementation of the Green Tamil Nadu Mission during the financial years 2021-2022 and 2022-2023 are detailed in the Table 3.

Table 3

(Rs. in crores)

Sl. No.	Funding Source	Fin. Year 2021-2022	Fin. Year 2022-2023
i.	Tamil Nadu Pollution Control Board	15.00	10.00
ii.	Tamil Nadu Forest Plantation Corporation Ltd., Tiruchirappalli	5.00	5.00
iii.	Tamil Nadu State Compensatory Afforestation Fund	1.00	2.80
	Total	**21.00**	**17.80**

14. For the successful and effective implementation of the Green Tamil Nadu Mission, the Government hereby issue the following directives to the Principal Chief Conservator of Forests (Head of Department), for compliance:

(i) The Green Tamil Nadu Mission should be a People's Movement by soliciting their engagement and by actively involving multiple agencies, organizations (Government / Non-Government), individuals, farmers, local bodies, Joint Forest Management Committees, Women Self Help Groups, private institutions/ agencies, academia, business houses, school and college students, youth organizations and media houses etc.

(ii) Remote Sensing and geospatial based decentralized monitoring mechanism for geo-tagging of all the planted seedlings should be developed for the purpose of concurrent/ real-time monitoring and supervision of planted seedlings along with their status of growth.

(iii) Third party monitoring (midterm and final) on various performance indicators of the Mission shall be undertaken by reputed institutions like Madras School of Economics, Madras Institute of Development Studies, Institute of Remote Sensing, Anna University, Chennai, Tamil Nadu Agricultural University, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru, Salim Ali Centre for Ornithology and Natural History (SACON) and other institutions.

(iv) Carbon sequestration in biomass, leaf litter and soil and revenue benefits generated for small and marginal farmers and other participating institutions shall be assessed periodically as per standard protocols.

(v) Adopt and implement best practices on social audit for achieving desired success in this community driven greening programme to ensure fairness and transparency.

15. The Principal Chief Conservator of Forests (Head of Department) shall send Utilization Certificates to the Government after completion of works only after documenting, tracking and validating the activities.

(BY ORDER OF THE GOVERNOR)

SUPRIYA SAHU
PRINCIPAL SECRETARY TO GOVERNMENT

To

The Principal Chief Conservator of Forests (Head of Department),
Chennai-600015.
The Chairman, Tamil Nadu Pollution Control Board,
Chennai-600032.
The Director of Environment,
Chennai-600015.
The Chairman, Tamil Nadu Forest Plantation Corporation Limited,
Chennai.
The Managing Director, Tamil Nadu Forest Plantation Corporation Limited,
Tiruchirappalli.
The Chief Executive Officer,
Tamil Nadu Compensatory Afforestation Fund Management and Planning Authority,
O/o.the Principal Chief Conservator of Forests (HoD), Chennai-600015.
The Principal Accountant General (A & E),
Chennai-18.
The Accountant General, Chennai-600 018.
The Pay and Accounts Officer (South), Chennai-35.
The Pay and Accounts / Treasury Officer concerned.

Copy to :

Office of the Hon'ble Chief Minister, Chennai-9.
The Senior Personal Assistant to Hon'ble Minister (Forests), Chennai-9.
The Private Secretary to Principal Secretary to Government,
Environment, Climate Change and Forests Department, Secretariat, Chennai-9.
The Special Personal Assistant to Hon'ble Minister (Finance and HRM), Chennai-9.
The Resident Audit Officer, Chennai-600009.
SF/SC.

// Forwarded: By Order //

M. Mogala
9/12/2021
SECTION OFFICER

9/12/2021

14(30)/2025/WRIT Section HO TNFD

सत्यमेव जयते

INDIA STATE OF FOREST REPORT 2023

VOLUME I

FOREST SURVEY OF INDIA

Ministry of Environment, Forest & Climate Change

File No.HO TNFD 2841/2025-WRIT-2 (Computer No. 807113)

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Table 2.4 State/UT wise Forest Cover inside and outside Recorded Forest Area (RFA)/Green Wash (GW)

State /UT	Geographical Area	Forest Cover Inside RFA/GW 2021*				Forest Cover Inside RFA/GW 2023				Forest Cover Change Inside RFA/GW	Forest Cover Outside RFA/GW 2021*		
		VDF	MDF	OF	Total	VDF	MDF	OF	Total		VDF	MDF	OF
	(A)				(B)				(C)	(C-B)			
Andhra Pradesh	1,62,922.57	1,925.22	12,588.26	9,437.75	23,951.23	1,925.32	12,469.70	9,472.74	23,867.76	-83.47	72.45	1,324.76	4,875.18
Arunachal Pradesh	83,743.22	19,633.01	26,867.22	11,719.58	58,219.81	19,637.05	26,699.94	11,836.97	58,173.96	-45.85	1,372.87	2,971.29	3,408.77
Assam	78,438.00	2,789.68	8,468.10	8,525.61	19,783.39	2,833.31	8,333.78	8,529.64	19,696.73	-86.66	357.15	1,431.29	6,753.48
Bihar	94,163.00	319.32	2,477.28	2,046.80	4,843.40	375.79	2,445.25	2,044.70	4,865.74	22.34	11.61	819.02	1,729.23
Chhattisgarh	1,35,192.00	5,449.44	26,367.76	10,616.60	42,433.80	5,796.08	26,070.85	10,553.46	42,420.39	-13.41	1,605.33	5,935.11	5,856.64
Delhi	1,483.00	4.06	18.75	47.65	70.46	4.02	18.24	49.94	72.20	1.74	2.66	37.74	84.50
Goa	3,702.00	518.19	325.85	380.03	1,224.07	532.61	340.31	351.01	1,223.93	-0.14	22.56	237.61	782.98
Gujarat	1,96,244.00	356.23	3,961.48	5,133.38	9,451.09	400.31	3,948.17	5,041.39	9,389.87	-61.22	18.62	955.52	4,411.34
Haryana	44,212.00	23.99	259.08	448.63	731.70	23.99	258.77	446.17	728.93	-2.77	3.18	185.98	707.36
Himachal Pradesh	55,673.00	2,835.93	5,395.79	2,440.18	10,671.90	2,791.82	5,431.88	2,483.27	10,706.97	35.07	361.75	1,828.56	2,663.41
Jharkhand	79,716.00	1,444.93	5,260.88	5,744.00	12,449.81	1,447.53	5,261.05	5,793.95	12,502.53	52.72	1,183.38	4,380.88	5,692.90
Karnataka	1,91,791.00	3,735.18	12,885.56	6,300.02	22,920.76	3,737.90	12,876.97	6,399.03	23,013.90	93.14	799.82	8,294.93	7,091.06
Kerala	38,852.00	1,878.93	5,429.89	2,578.79	9,887.61	1,877.59	5,420.36	2,627.89	9,925.84	38.23	164.00	3,923.79	7,950.54
Madhya Pradesh	3,08,252.11	6,468.74	31,676.75	29,651.78	67,797.27	6,886.21	31,366.97	29,517.32	67,770.50	-26.77	189.37	2,462.26	6,996.08
Maharashtra	3,07,713.00	8,497.78	15,103.73	12,522.82	36,124.33	9,538.99	15,827.39	10,744.55	36,110.93	-13.40	303.75	5,516.60	8,968.32
Manipur	22,327.00	893.87	5,776.36	8,168.05	14,838.28	893.52	5,744.86	8,152.43	14,790.81	-47.47	10.68	484.15	1,307.18
Meghalaya	22,429.00	508.98	7,599.66	6,575.02	14,683.66	547.93	7,502.05	6,600.87	14,650.85	-32.81	46.47	1,537.75	728.96
Mizoram	21,081.00	193.73	8,648.64	8,594.31	17,436.68	259.83	8,438.53	8,931.24	17,629.60	192.92	0.36	190.89	120.80
Nagaland	16,579.00	1,159.01	3,172.73	4,219.21	8,550.95	1,156.13	3,168.30	4,195.60	8,520.03	-30.92	102.24	1,312.73	2,308.44
Odisha	1,55,707.00	5,706.07	14,800.09	12,416.14	32,922.30	5,709.16	14,834.51	12,496.80	33,040.47	118.17	1,521.14	6,227.68	11,610.55
Punjab	50,362.00	9.20	450.57	317.03	776.80	8.72	450.21	316.83	775.76	-1.04	0.72	335.03	733.99
Rajasthan	3,42,238.99	74.96	4,021.11	8,583.22	12,679.29	216.92	3,892.73	8,596.49	12,706.14	26.85	3.87	353.94	3,594.91
Sikkim	7,096.00	831.81	880.77	345.13	2,057.71	831.08	879.76	349.79	2,060.63	2.92	272.24	676.05	347.21
Tamil Nadu	1,30,060.00	3,346.49	8,689.97	5,720.84	17,757.30	3,344.13	8,681.60	5,708.57	17,734.30	-23.00	242.47	2,383.64	6,127.77
Telangana	1,12,122.44	1,548.47	8,632.59	8,380.92	18,561.98	1,544.81	8,520.97	8,390.33	18,456.11	-105.87	71.11	440.24	2,206.13
Tripura	10,486.00	408.31	3,885.15	1,179.63	5,473.09	393.77	3,719.84	1,242.58	5,356.19	-116.90	225.33	1,258.32	723.34
Uttar Pradesh	2,40,927.56	2,504.56	3,049.96	3,745.08	9,299.60	2,537.81	3,041.49	3,759.46	9,338.76	39.16	150.73	945.57	4,531.47
Uttarakhand	53,483.36	4,314.25	9,306.92	3,292.55	16,913.72	4,520.08	9,109.85	3,269.35	16,899.28	-14.44	726.93	3,439.86	3,246.30
West Bengal	88,752.00	2,763.59	2,623.20	2,236.98	7,623.77	2,781.11	2,654.27	2,253.18	7,688.56	64.79	253.67	1,506.87	7,397.80
A & N Islands	8,249.00	5,373.00	549.13	250.67	6,172.80	5,393.99	525.49	251.03	6,170.51	-2.29	309.80	127.93	126.41
Chandigarh	114.00	1.29	5.07	2.35	8.71	1.36	5.04	2.54	8.94	0.23	0.07	8.68	6.34
Dadra & Nagar Haveli and Daman & Diu	602.00	0.00	69.38	90.64	160.02	0.00	67.85	90.66	158.51	-1.51	1.36	11.62	52.94
Jammu & Kashmir**	2,22,236.00	3,073.01	5,351.35	4,652.89	13,077.25	3,073.86	5,352.73	4,685.44	13,112.03	34.78	1,133.39	2,639.37	4,412.83
Ladakh**		2.20	179.16	619.12	800.48	2.20	183.53	608.85	794.58	-5.90	0.07	333.12	1,144.88
Lakshadweep	29.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.97	10.09
Puducherry	490.00	0.00	0.61	2.41	3.02	0.00	0.61	2.47	3.08	0.06	0.00	10.15	30.98
Total	**32,87,468.88**	**88,593.43**	**2,44,778.80**	**1,86,985.81**	**5,20,358.04**	**91,024.93**	**2,43,543.85**	**1,85,796.54**	**5,20,365.32**	**7.28**	**11,541.15**	**64,545.90**	**1,18,741.11**

**Revised area figures calculated without normalization factor.*

*** Area for individual UTs of Jammu & Kashmir and Ladakh have not been received from SoI. The geographical area reported for the unified J&K in Census 2011 is 2,22,236 km^2.*

The States/UTs which have provided RFA boundaries are shown in light green colour while the other States/ UTs where GW have been used are shown in dark green colour.

#Tree cover also includes all bamboo clumps and trees of dbh of 5-10 cm which were not included in published figures reported in ISFR 2021. Therefore, Tree cover figures of 2021 have also been revised.

File No. HOTNFD/2841/2025-WRIT 2 (Computer No. 307113)
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	Forest Cover Outside RFA/GW 2023				Forest Cover Change Outside RFA / GW	Total Forest Cover 2021*	Total Forest Cover 2023	Total Forest Cover Change	Tree Cover 2021*	Total Forest Cover including Tree Cover 2021	Tree Cover 2023	Total Forest Cover including Tree Cover 2023	Change in Tree Cover	Net Change in Forest Cover and Tree Cover	Percentage of Forest and Tree Cover
Total	VDF	MDF	OF	Total											
(D)				(E)	(E-D)	(S=B+D)	(T= C+E)	(T-S)	(F)	(X=S+F)	(G)	(Y=T+G)	(G-F)	(Y-X)	Y*100/A
6,272.39	70.39	1,256.05	4,890.76	6,217.20	-55.19	30,223.62	30,084.96	-138.66	5,247.36	35,470.98	5,340.02	35,424.98	92.66	-46.00	21.74
7,752.93	1,348.27	2,915.15	3,444.19	7,707.61	-45.32	65,972.74	65,881.57	-91.17	1,162.95	67,135.69	1,201.63	67,083.20	38.68	-52.49	80.11
8,541.92	356.40	1,430.76	6,829.66	8,616.82	74.90	28,325.31	28,313.55	-11.76	2,173.62	30,498.93	2,101.46	30,415.01	-72.16	-83.92	38.78
2,559.86	11.21	838.96	1,816.54	2,666.71	106.85	7,403.26	7,532.45	129.19	2,623.38	10,026.64	2,370.21	9,902.66	-253.17	-123.98	10.52
13,397.08	1,620.49	5,912.95	5,857.92	13,391.36	-5.72	55,830.88	55,811.75	-19.13	5,835.95	61,666.83	6,538.70	62,350.45	702.75	683.62	46.12
124.90	2.45	35.31	85.32	123.08	-1.82	195.36	195.28	-0.08	171.06	366.42	176.03	371.31	4.97	4.89	25.04
1,043.15	22.85	249.12	769.82	1,041.79	-1.36	2,267.22	2,265.72	-1.50	260.08	2,527.30	257.82	2,523.54	-2.26	-3.76	68.17
5,385.48	19.40	954.03	4,653.34	5,626.77	241.29	14,836.57	15,016.64	180.07	6,648.28	21,484.85	6,632.29	21,648.93	-15.99	164.08	11.03
896.52	3.18	182.41	699.74	885.33	-11.19	1,628.22	1,614.26	-13.96	1,551.85	3,180.07	1,693.02	3,307.28	141.17	127.21	7.48
4,853.72	325.78	1,848.41	2,699.19	4,873.38	19.66	15,525.62	15,580.35	54.73	813.35	16,338.97	855.07	16,435.42	41.72	96.45	29.52
11,257.16	1,187.82	4,379.94	5,695.49	11,263.25	6.09	23,706.97	23,765.78	58.81	3,409.40	27,116.37	3,637.55	27,403.33	228.15	286.96	34.38
16,185.81	799.89	8,274.78	7,165.70	16,240.37	54.56	39,106.57	39,254.27	147.70	8,386.21	47,492.78	7,779.15	47,033.42	-607.06	-459.36	24.52
12,038.33	163.58	3,901.46	8,068.48	12,133.52	95.19	21,925.94	22,059.36	133.42	3,025.60	24,951.54	2,905.94	24,965.30	-119.66	13.76	64.26
9,647.71	135.10	2,141.67	7,026.17	9,302.94	-344.77	77,444.98	77,073.44	-371.54	8,891.01	86,335.99	8,650.14	85,723.58	-240.87	-612.41	27.81
14,788.67	326.63	5,750.40	8,670.57	14,747.60	-41.07	50,913.00	50,858.53	-54.47	14,413.67	65,326.67	14,524.88	65,383.41	111.21	56.74	21.25
1,802.01	10.53	472.69	1,311.43	1,794.65	-7.36	16,640.29	16,585.46	-54.83	217.19	16,857.48	209.82	16,795.28	-7.37	-62.20	75.22
2,313.18	46.91	1,521.76	747.32	2,315.99	2.81	16,996.84	16,966.84	-30.00	774.63	17,771.47	720.56	17,687.40	-54.07	-84.07	78.86
312.05	1.69	197.23	161.94	360.86	48.81	17,748.73	17,990.46	241.73	631.11	18,379.84	567.80	18,558.26	-63.31	178.42	88.03
3,723.41	100.25	1,293.51	2,308.68	3,702.44	-20.97	12,274.36	12,222.47	-51.89	467.35	12,741.71	394.02	12,616.49	-73.33	-125.22	76.10
19,359.37	1,515.26	6,231.04	11,646.79	19,393.09	33.72	52,281.67	52,433.56	151.89	5,756.77	58,038.44	6,163.45	58,597.01	406.68	558.57	37.63
1,069.74	0.72	334.68	734.93	1,070.33	0.59	1,846.54	1,846.09	-0.45	1,297.93	3,144.47	1,475.15	3,321.24	177.22	176.77	6.59
3,952.72	6.28	344.68	3,491.11	3,842.07	-110.65	16,632.01	16,548.21	-83.80	10,362.86	26,994.87	10,841.12	27,389.33	478.26	394.46	8.00
1,295.50	272.23	676.13	349.41	1,297.77	2.27	3,353.21	3,358.40	5.19	50.64	3,403.85	48.33	3,406.73	-2.31	2.88	48.01
8,753.88	242.06	2,345.43	6,128.43	8,715.92	-37.96	26,511.18	26,450.22	-60.96	5,323.73	31,834.91	5,370.72	31,820.94	46.99	-13.97	24.47
2,717.48	68.51	388.93	2,265.49	2,722.93	5.45	21,279.46	21,179.04	-100.42	3,478.88	24,758.34	3,517.66	24,696.70	38.78	-61.64	22.03
2,206.99	220.66	1,210.15	797.77	2,228.58	21.59	7,680.08	7,584.77	-95.31	252.95	7,933.03	247.56	7,832.33	-5.39	-100.70	74.69
5,627.77	150.92	959.92	4,596.20	5,707.04	79.27	14,927.37	15,045.80	118.43	8,510.16	23,437.53	8,950.92	23,996.72	440.76	559.19	9.96
7,413.09	746.50	3,407.78	3,250.27	7,404.55	-8.54	24,326.81	24,303.83	-22.98	1,201.59	25,528.40	1,231.14	25,534.97	29.55	6.57	47.74
9,158.34	255.99	1,521.11	7,366.67	9,143.77	-14.57	16,782.11	16,832.33	50.22	2,962.61	19,744.72	2,938.12	19,770.45	-24.49	25.73	22.28
564.14	308.88	127.71	125.82	562.41	-1.73	6,736.94	6,732.92	-4.02	24.51	6,761.45	26.97	6,759.89	2.46	-1.56	81.95
15.09	0.08	8.48	7.50	16.06	0.97	23.80	25.00	1.20	16.72	40.52	21.18	46.18	4.46	5.66	40.51
65.92	1.36	10.74	55.01	67.11	1.19	225.94	225.62	-0.32	34.87	260.81	36.83	262.45	1.96	1.64	43.60
8,185.59	1,134.93	2,653.83	4,445.60	8,234.36	48.77	21,262.84	21,346.39	83.55	3,659.27	24,922.11	3,666.97	25,013.36	7.70	91.25	12.69
1,478.07	0.07	325.54	1,165.73	1,491.34	13.27	2,278.55	2,285.92	7.37	1,059.65	3,338.20	893.02	3,178.94	-166.63	-159.26	
27.06	0.00	16.97	10.09	27.06	0.00	27.06	27.06	0.00	0.05	27.11	0.20	27.26	0.15	0.15	92.00
41.13	0.00	9.72	31.51	41.23	0.10	44.15	44.31	0.16	27.70	71.85	28.89	73.20	1.19	1.35	14.94
1,94,828.16	**11,477.27**	**64,129.43**	**1,19,370.59**	**1,94,977.29**	**149.13**	**7,15,186.20**	**7,15,342.61**	**156.41**	**1,10,724.94**	**8,25,911.14**	**1,12,014.34**	**8,27,356.95**	**1,289.40**	**1,445.81**	**25.17**

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ABSTRACT

Forests – Announcement made on the floor of the Legislative Assembly – Creation of "Maragatha Pooncholai" n 100 villages at a cost of Rs.25.00 Crore – Orders issued.

ENVIRONMENT,CLIMATE CHANGEAND FOREST (FR.6) DEPARTMENT

G.O.(MS) No: 146

Dated :24.08.2022
சுபகிருது:ஆவணி 8
திருவள்ளுவர்ஆண்டு-2053
Read:

From Principal Chief Conservator of Forests, letter No J3/12280/ 2022, dated: 24.05.2022.

- - - - - -

ORDER :

Government had made the following announcement on the floor of the Legislative Assembly on 25.4.2022:

"தமிழ்நாடு அரசு, வனத்துறையின் முயற்சியாக இந்த ஆண்டில் 100 கிராமங்களில் மரகதப் பூஞ்சோலைகள் ஏற்படுத்தப்படும். வனத்தையொட்டியுள்ள கிராமங்களில் இப்பசுமை சோலைகள் ஏற்படுத்தப்படும். இவை ஒவ்வொன்றும் சுமார் ஒரு ஹெக்டேர் பரப்பளவை கொண்டிருக்கும். இந்த மரகதப் பூஞ்சோலைகள் உள்ளூர் கிராமத்தின் மரம் மற்றும் ஊரக விறகு தேவைகளை நிறைவேற்றுவதுடன், நீர்நிலைகளை மேம்படுத்தி சூழலியல் சேவைகளை வழங்குவதோடு பல்வேறு பொழுதுபோக்கு வசதிகளையும் வழங்கும். கிராமத்தின் பொதுநலனுக்காக உள்ளூர் சமூகம் இந்த சோலைகளில் இருந்து பொதுப்பயன் உரிமைகளைப் பெற்றிருக்கும். இந்தமரகதப் பூஞ்சோலைகள் 100 ஹெக்டேர் பரப்பளவில் ரூ.25 கோடி செலவில் உருவாக்கப்படும்."

2. In accordance with the above, the Government of Tamil Nadu has decided to set up village woodlots viz. "MaragathaPooncholai" in 100 villages in Tamil Nadu. Community woodlots play an extremely important role in providing natural resources including timber, fuel wood, fodder, etc. to the local community in their vicinity. Community woodlots are also essential to reduce biotic pressure on forest areas. Government of Tamil Nadu, therefore has decided to set up 100 village woodlots with following objectives:-

(i) Reduce the dependency of the local community on forest by meeting the local requirement of timber, fuel wood and fodder etc. through village woodlots.

(ii) Involve and engage the local community in creating village woodlots as a sustainable exercise to maintain the green cover in the State.

(iii) Provide an alternate source of income to the local village through village woodlots as a source of economic activity.

3. In the letter read above, the Principal Chief Conservator of Forests has sent a proposal to establish 100 "MaragathaPooncholai" across the State of Tamil Nadu on suitable community lands (non-forest) in various districts in Tamil Nadu. It has been suggested to establish 100 "MaragathaPooncholai" in villages situated close to forest areas,so as to reduce biotic pressure on forests. Each "MaragathaPooncholai" shall be set up in an area of at least 1-hectare and above. Principal Chief Conservator of Forests has therefore requested to sanction Rs.25.00 Crore for implementation of the scheme during 2022-2023.

4. The Government after careful examination of the request of the Principal Chief Conservator of Forests have ordered to set up "MaragathaPooncholai" in 100 villages at a total cost of Rs.25.00 Crore during the year 2022-2023. Principal Chief Conservator of Forests shall submit a detailed proposal after identifying 100 villages for creation of "MaragathaPooncholai". Detailed administrative and financial sanction shall be issued thereafter.

5. Principal Chief Conservator of Forests shall submit the proposal with Detailed Project Report including fund requirements for fencing, pitting, planting of seedlings, water facilities, maintenance work etc.

(BY ORDER OF THE GOVERNOR)

SUPRIYA SAHU
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT

To
The Principal Chief Conservator of Forests (HoFF), Chennai-15.

Copy to :-
Finance (E,CC&F) Department, Chennai-9.
The Senior Personal Assistant to Hon'ble Minister (Forest), Chennai-9.
The Private Secretary to Additional Chief Secretary to Government, Environment, Climate Change and Forests Department, Chennai – 9.
Stock File / Spare Copy.

// Forwarded/ By Order //

ANNEXURE 7

ABSTRACT

Forests – Announcement - Creation of "Maragatha Pooncholai" in 100 villages at a cost of Rs.25.00 Crore – Administrative sanction for Rs.1125.00 Lakh and Financial sanction for Rs.1072.035 Lakh for creation of "Maragatha Pooncholai" in 45 villages - Orders issued.

ENVIRONMENT, CLIMATE CHANGE AND FOREST (FR.6) DEPARTMENT

G.O.(Ms) No: 30 **Dated: 09.02.2023**
சுபகிருது, தை – 26
திருவள்ளுவர் ஆண்டு–2054

Read:

1. G.O.(Ms) No:146, Environment, Climate Change and Forest (FR-6) Department, dated:24.08.2022.
2. From the Principal Chief Conservator of Forests, letter No J3/12280/2022, dated: 12.11.2022.

ORDER :

Government had made the following announcement on the floor of the Legislative Assembly on 25.4.2022:-

"தமிழ்நாடு அரசு, வனத்துறையின் முயற்சியாக இந்த ஆண்டில் 100 கிராமங்களில் மரகதப் பூஞ்சோலைகள் ஏற்படுத்தப்படும். வனத்தையொட்டியுள்ள கிராமங்களில் இப்பசுமை சோலைகள் ஏற்படுத்தப்படும். இவை ஒவ்வொன்றும் சுமார் ஒரு ஹெக்டேர் பரப்பளவை கொண்டிருக்கும். இந்த மரகதப் பூஞ்சோலைகள் உள்ளூர் கிராமத்தின் மரம் மற்றும் ஊரக விறகு தேவைகளை நிறைவேற்றுவதுடன், நீர்நிலைகளை மேம்படுத்தி சூழலியல் சேவைகளை வழங்குவதோடு பல்வேறு பொழுதுபோக்கு வசதிகளையும் வழங்கும். கிராமத்தின் பொது நலனுக்காக உள்ளூர் சமூகம் இந்த சோலைகளில் இருந்து பொதுப்பயன் உரிமைகளைப் பெற்றிருக்கும். இந்தமரகதப் பூஞ்சோலைகள் 100 ஹெக்டேர் பரப்பளவில் ரூ.25 கோடி செலவில் உருவாக்கப்படும்."

2. In Government Order first read above, the Government have issued orders for creation of "Maragatha Pooncholai" in 100 villages at a cost of Rs.25.00 Crore with a condition that the administrative and financial sanction shall be issued only after receiving proposals with detailed project report including fund requirements for fencing, pitting, planting of seedlings, water facilities, maintenance work etc.

3. In the letter second read above, the Principal Chief Conservator of Forests (Head of Forest Force) has furnished the comprehensive proposal for implementation of this scheme during 2022-23 as Phase-I.

He has also stated that they have identified 45 villages for creation of Maragatha Pooncholai as detailed below:-

Sl. No	Name of the Circle	District / division	Name of Villages	No. of selected Villages
1	Salem	Salem	Sekkadapatti	5
2			Ulipuram	
3			Thedavur	
4			Yethapur, Muthumalai Murugan Kovil Karadu	
5			Vedapatti	
6		Namakkal	Sanniyaasikaradu	5
			Kurukkapuram	
8			Pattanam	
9			Aleripatti	
10			Mullakuruchi, Kamaraj Nagar	
11	Villupuram	Villupuram	Udayanatham	2
12			Puthukaruvachi	
13		Kallakuruchi	V.Alambalam	3
14			Varathappanur	
15			Eyanur	
16			Nallamuthupalayam	
17	Dindigul	Karur	PerurUdaiyapatty	3
18			Tharagampatty	
19		Dindigul	Idaiyakottai	2
20			Kallimandayam	
21	ATR, Coimbatore	Tiruppur	Kandasamy Puthur	3
22			Thirumoorthi Nagar	
23			Ganapathypalayam	
24		Coimbatore	Ilupanatham	1

25	Dharmapuri	Dharmapuri	Erukkampatti	4
26			Kamalanatham	
27			Kombur	
28			Jothi Patti	
29		Krishnagiri	Thally	7
30			Kummanur	
31			Avalakakampatti	
32			Thanampatti	
33			Marampatti	
34			Melumalai	
35			Ennekolu	
36	Vellore	Vellore	Perumanthangal	3
37			Moonjurpet	
38			Kukkalapalli	
39		Ranipet	Dharmagiri	3
40			Valayathur	
41			Elavambadi	
42	KMTR	Thoothukudi	Muthukaruppan High School.	1
43	Trichy	Nagapattinam	Thalaiyamalai	1
44		Tanjavur	Poondi	2
45			Govindapuram	
		Total		**45**

4. The Principal Chief Conservator of Forests (HoFF) has also furnished the details of activities to be carried in 1.00 ha under this scheme for one village is enlisted below:

Sl. No	Item of works	Unit	Qty/ in No.	Unit rate in Rupees	Financial (Rs.in lakh)			Total
					Raising nursery, planting works	1st year Maint works	2nd year maint works	
I.	**Integrated Green Cover activities**							
	a) Raising Nursery	Seedlings	688	23.11	15900	0	0	15900

	b)	Planting Native species of Trees	Seedlings	625	88.00	55000	0	0	55000
	c)	1st year maintenance	Seedlings	625	91.52	0	57200	0	57200
	e)	2nd year maintenance	Seedlings	625	96.80	0	0	60500	60500
II	**Infrastructure Development**								
	a)	Creation of drilling borewell with erection of electric motor etc., for providing water facilities	No.	1	781000	781000	0	0	781000
	b)	Erection of greenery entrance and arch	No.	1	346500	346500	0	0	346500
	c)	Fencing with chain link and L angle post 450 Rm for 1 Ha				480000	0	0	480000
	d)	Providing pathways, Park benches, and erection of signage boards			275000	275000	0	0	275000
	e)	Providing semi-permanent visitors shed cum pump room	No.	1	429000	429000	0	0	429000
				Total		**2382400**	**57200**	**60500**	**2500100 (or) 2500000**

The total amount required for 45 Nos., Maragatha Pooncholai is Rs.1125.00 Lakh (45*25 = 1125.00 Lakh) including 1st Year and 2nd Year Maintenance works.

5. The Principal Chief Conservator of Forests (Head of Forest Force), Chennai has also furnished the Circle-wise breakup details for requirement of fund, copies of Model Estimates for raising, planting, maintenance etc., and requested the Government to accord administrative sanction for a sum of Rs.1125.00 lakh for creation of Maragatha Pooncholai in 45 villages and financial sanction for an amount of Rs.1072.035 lakh (Excluding1st year and 2nd year maintenance works) for implementation of the scheme, "Maragatha Pooncholai", in 2022-23 as the first phase.

6. After careful examination of the proposal of the Principal Chief Conservator of Forests (Head of Forest Force), the Government accord administrative sanction for a sum of Rs.1125.00 lakh for creation of "Maragatha Pooncholai" in 45 villages and financial sanction for an amount of Rs.10,72,03,500/- (Rupees Ten crore seventy two lakh three thousand and five hundred only) (Excluding 1st year and 2nd year maintenance works) for implementation of the scheme, "Maragatha Pooncholai", during 2022-23 as the first phase, as detailed in para-3 above and also directed to set up them in common areas offering recreation and satisfying the rural requirements of timber and fuel, as per the announcement.

7. The amount sanctioned at para-6 above shall be debited to the following new Head of Account:-

2406 Forestry AND Wild Life 01Forestry 102 Social and Farm Forestry State's Expenditure AT Establishment of "Maragatha Pooncholai" in the Villages adjacent to the Forests 317 Minor Works - 01 Minor Works. – Rs.31,63,500/-

(DPC: 2406 01 102 AT 31701)

4406 – CAPITAL OUTLAY ON FORESTRY AND WILD LIFE – 01 FORESTRY – 102 Social and Farm Forestry – State's Expenditure AT Establishment of "Maragatha Pooncholai" in the Villages adjacent to the Forests 416 Major Works – 01 Major Works. – Rs.10,40,40,000/-

(DPC: 4406 01 102 AT 41601)

8. The expenditure sanctioned in para 6 above shall constitute an item of " New Service" and the approval of the Legislature shall be obtained in due course of time by an inclusion in the Supplementary Estimates for the year 2022-23. Pending approval of the Legislature, the expenditure shall initially be met by drawl of an advance from the Contingency Fund. Orders regarding this will be issued by the Finance (BG.I) Department separately. The Principal Chief Conservator of Forests (Head of Forest Force) shall apply to the Government in Finance (BG-1) Department in prescribed format along with a copy of this order for sanction of an advance from the Contingency Fund. The Principal Chief Conservator of Forests (Head of Forest Force), shall also send necessary draft explanatory notes for inclusion of the expenditure in the Supplementary Estimates for the year 2022-23 to Finance (E,CC&F/BG-I) Department at an appropriate time without fail.

9. The Principal Chief Conservator of Forests (Head of Forest Force) is the Estimating, Reconciling and Controlling authority for the above said new head of account. The Pay and Accounts Officer/ Treasury Officer concerned are directed to open the above said new Head of Account in their Books.

10. This order issues with the concurrence of Finance Department vide its U.O.No 5478/2023 dated 09.02.2023 with ASL No 2440 (Two thousand four hundred and fourty (IFHRMS ASL No.2023022440)

(BY ORDER OF THE GOVERNOR)

SUPRIYA SAHU
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT

To
The Principal Chief Conservator of Forests (Head of Forest Force), Chennai-32.
The Accountant General, office of the Accountant General, Chennai-18.
The Pay & Accounts Officer, Chennai-35.
The Treasury Officers Concerned,
(Through: The Principal Chief Conservator of Forests (Head of Forest Force), Chennai-32.

Copy To:

Office of the Hon'ble Chief Minister, Chennai-09.
Office of the Hon'ble Minister (Finance and Human Resources Management), Chennai – 09.
Office of the Hon'ble Minister (Forest), Chennai – 09.
Finance (E, CC&F/BG-I/II W&M-1) Department, Chennai – 09.
The Environment, Climate Change and Forest (OP-II) Department, Chennai-09.
(to update the G.O number and date in IFHRMS portal)
The Private Secretary to Additional Chief Secretary to Government, Environment, Climate Change and Forest Department, Chennai – 09.
The Private Secretary to Special Secretary (Forest), Environment, Climate Change and Forest Department, Chennai – 09.
SF/SC

// Forwarded/ By Order //

SECTION OFFICER

ANNEXURE 8

ABSTRACT

Forests – Announcement - Creation of "Maragatha Pooncholai" in 100 villages at a cost of Rs.25.00 Crore – Administrative sanction for Rs.950.00 Lakh and Financial sanction for Rs.905.274 Lakh for creation of "Maragatha Pooncholai" in 38 villages - Orders issued.

ENVIRONMENT, CLIMATE CHANGE AND FORESTS(FR.6) DEPARTMENT

G.O.(Ms) No: 83

Dated: 19.04.2023
சோபகிருது, சித்திரை –06
திருவள்ளுவர்ஆண்டு–2054

Read:

1. G.O.(Ms) No.146, Environment, Climate Change and Forest (FR-6) Department, dated:24.08.2022.

2. G.O.(Ms) No.30, Environment, Climate Change and Forest (FR-6) Department, dated: 09.2.2023.

3. From the Principal Chief Conservator of Forests, letter No J3/12280/2022, dated: 03.1.2023.

ORDER :

In the Government Order first read above, the Government have issued orders for creation of "Maragatha Pooncholai" in 100 villages at a cost of Rs.25.00 Crore with a condition that the administrative and financial sanction shall be issued only after receiving proposals with detailed project report including fund requirements for fencing, pitting, planting of seedlings, water facilities, maintenance work etc,

2. In the Government Order second read above, the Government accorded administrative sanction for a sum of Rs.1125.00 lakh for creation of "Maragatha Pooncholai" in 45 villages and financial sanction for an amount of Rs.10,72,03,500/- (Excluding 1st year and 2nd year maintenance works) for implementation of the scheme, "Maragatha Pooncholai", during 2022-23 as the first phase and also directed to set up them in common areas offering recreation and satisfying the rural requirements of timber and fuel, as per the announcement.

3. In the letter third read above, the Principal Chief Conservator of Forests (Head of Forest Force) has furnished the comprehensive proposal for implementation of this scheme during 2022-23 as Phase-II. He has also stated that they have identified 38 villages for

creation of Maragatha Pooncholai as detailed below:-

Details of Maragatha Pooncholai Selected Villages – 2022-23 (Phase-2)				
Sl. No	**Name of the Circle**	**District / division**	**Name of Villages**	**No of selected Villages**
1	CF, Salem	Salem	Ramanaikan Palayam	5
2			Servaaipattu	
3			Thgarapputhur	
4			Mookanur	
5			Karumapuram	
6	KMTR	Thoothukudi	Therkupanaiyur	1
7	SMTR, Madurai	Theni	Kottur	1
8		Sivagangai	Paganeri	3
9			Kattambur	
10			Vadakku Chandanoor	
11		Ramanathapuram	Aatrangarai	1
12			AchadiPirambu	1
13		Madurai	Seemanuthu	1
14	Trichy	Myladuthurai	Koolaiyaar	1
15		Puthukottai	Kuppayanpatty	3
16			Valiyampaati	
17			Unaiyur	
18		Thiruvarur	Vilamal	4
19			Thirurameshwaram	
20			Edamalaiyur	
21			Karuvakuruchi	
22		Ariyalur	Keelkolathur	1
23		Trichy	Edaiyapatty	2
24			Palamalai Karuppar Kovil	

25	Chennai	Chengalpattu	Perumperkandigai	2
26			Karikkili	
27		Kancheepuram	Asoor	4
28			Vadathavoor	
29			Valayakaranai	
30			Sankarapuram	
31		Tiruvallur	Kolanoor	4
32			Poondi	
33			Kerukkampaakam	
34			Veeraragapuram	
35	STR	Sathyamangalam	Kongerpalayam	1
36	CF Villupuram	Cuddalore	Keelakuruchi	3
37			Peralaiyur	
38			C.Puthupettai	
Total				**38**

4. The Principal Chief Conservator of Forests (Head of Forest Force) has also furnished the details of activities to be carried in 1.00 ha under this scheme for one village is enlisted below:-

Sl. No	Item of works		Unit	Qty/ in number	Unit rate (Rs.in Rupees)	Financial (Rs.in lakh)			Total
						Raising nursery, planting works	1st year Maint works	2nd year maint works	
.	**Integrated Green Cover activities**								
	a)	Raising Nursery	Seedlings	688	23.11	15900	0	0	15900
	b)	Planting Native species of Trees	Seedlings	625	88.00	55000	0	0	55000
	c)	1st year maintenance	Seedlings	625	91.52	0	57200	0	57200
	d)	2nd year maintenance	Seedlings	625	96.80	0	0	60500	60500
.	**Infrastructure Development**								
	a)	Drilling of bore well with erection of electric motor etc., for providing water facilities	No.	1	781000	781000	0	0	781000

	b)	Erection of greenery entrance and arch	No.	1	346500	346500	0	0	346500
	c)	Fencing with chain link and L angle post 450 Rm for 1 Ha				480000	0	0	480000
	d)	Providing pathways, Park benches, and erection of signage boards			275000	275000	0	0	275000
	e)	Providing semi-permanent visitors shed cum pump room	No.	1	429000	429000	0	0	429000
				Total		**2382400**	**57200**	**60500**	**2500100**
									(or) 2500000

The total amount required for 38 Nos., Maragatha Pooncholai is Rs.950.00 Lakh (38*25 = 950.00 Lakh) including 1st Year and 2nd Year Maintenance works.

5. The Principal Chief Conservator of Forests (Head of Forest Force), Chennai has also furnished the Circle-wise breakup details for requirement of fund, copies of Model Estimates for raising, planting, maintenance etc., and requested the Government to accord administrative sanction for a sum of Rs.950.00 lakh for creation of Maragatha Pooncholai in 38 villages and financial sanction for an amount of Rs. 905.274 lakh (Excluding1st year and 2nd year maintenance works) for implementation of the scheme, "Maragatha Pooncholai", as the second phase.

6. After careful examination of the proposal of the Principal Chief Conservator of Forests (Head of Forest Force), the Government accord administrative sanction for a sum of Rs.950.00 lakh for creation of "Maragatha Pooncholai" in 38 villages and financial sanction for an amount of Rs.905.274/- lakh (Rupees Nine crore five lakh twenty seven thousand and four hundred only) (Excluding 1st year and 2nd year maintenance works) for implementation of the scheme, "Maragatha Pooncholai", as second phase, as detailed in para-3 & 4 above and also directed to set up them in common areas offering recreation and satisfying the rural requirements of timber and fuel, as per the announcement.

7. The amount sanctioned at para-6 above shall be debited to the following Heads of Account:-

2406 - Forestry and Wild Life – 01 - Forestry 102 Social and Farm Forestry - State's Expenditure - AT - Establishment of "Maragatha Pooncholai" in the Villages adjacent to the Forests - 317 - Minor Works - 01 Minor Works – Rs.26,72,000/-

(DPC: 2406 01 102 AT 31701)

4406 – CAPITAL OUTLAY ON FORESTRY AND WILD LIFE – 01 FORESTRY – 102 Social and Farm Forestry – State's Expenditure – AT - Establishment of "Maragatha Pooncholai" in the Villages adjacent to the Forests - 416 Major Works – 01 Major Works. – Rs.8,78,56,000/-

(DPC: 4406 01 102 AT 41601)

8. Necessary additional funds of Rs.3,13,42,000/- will be provided in Revised Estimate / Final Modified Appropriation 2023-2024. Pending provision of such funds, the Principal Chief Conservator of Forests (Head of Forest Force) is authorised to draw and disburse the amount sanctioned at para 6 above. However this expenditure shall be brought to the notice of the Legislative Assembly by specific inclusion in the Supplementary Estimate 2023-2024. The Principal Chief Conservator of Forests (Head of Forest Force) is directed to include this expenditure while sending the Budget proposal for Revised Estimate/Final Modified Appropriation 2023-2024 and also to send necessary draft explanatory notes for including the above expenditure in the Supplementary Estimate 2023-2024 to Government in Finance (ECCF/BG-I) Department at the appropriate time without fail.

9. This order issues with the concurrence of Finance Department vide its U.O.No. 10153 dated 13.04.2023 with ASL No. 0014 (Fourteen) (IFHRMS ASL No.2023040014)

(BY ORDER OF THE GOVERNOR)

SUPRIYA SAHU
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT

To
The Principal Chief Conservator of Forests (Head of Forest Force), Chennai-32.
The Accountant General, office of the Accountant General, Chennai-18.
The Pay & Accounts Officer, Chennai-35.
The Treasury Officers Concerned,
(Through: The Principal Chief Conservator of Forests (Head of Forest Force),Chennai-32.

Copy To:
Office of the Hon'ble Chief Minister, Chennai-09.
Office of the Hon'ble Minister (Finance and Human Resources Management), Chennai – 09.
Office of the Hon'ble Minister (Forest), Chennai – 09.
Finance (E, CC&F/BG-I/II W&M-1) Department, Chennai – 09.
The Environment, Climate Change and Forest (OP-II) Department, Chennai-09.
(to update the G.O number and date in IFHRMS portal)
The Private Secretary to Additional Chief Secretary to Government,
Environment, Climate Change and Forest Department, Chennai – 09.
The Private Secretary to Special Secretary (Forest),
Environment, Climate Change and Forest Department, Chennai – 09.
Stock File/ Spare Copy

// Forwarded/ By Order //

SECTION OFFICER

ANNEXURE 9

ABSTRACT

Schemes – Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) – Convergence of the activities of the Green Tamil Nadu Mission with the MGNREGS 2024-25 to 2026-27 Guidelines – Orders – Issued.

RURAL DEVELOPMENT AND PANCHAYAT RAJ (CGS1) DEPARTMENT

G.O(Ms) No.153

Dated : 03.10.2024.
குரோதி, புரட்டாசி 17,
திருவள்ளுவர் ஆண்டு 2055

Read :

1. From the Special Secretary (Forest), Environment, Climate Change and Forests Department Letter No.1676/FR6/2024-1, dated 06.06.202,19.07.2024 and 22.07.2024.
2. Director of Rural Development and Panchayat Raj Roc.No.38227/2024/MGNREGS-1-1, dated 30.08.2024.

ORDER:-

The Environment, Climate Change and Forests Department has prepared a Project Report on convergence of Green Tamil Nadu Mission with MGNREGS for raising and planting of quality seedings in farm lands, community lands, urban and peri-urban areas, institutional lands, water bodies, panchayat tanks and degraded forest landscapes and in this regard a meeting was held on 23.07.2024 with the Principal Secretary to Government, Environment, Climate Change and Forests Department to discuss the Convergence of activities of the Green Tamil Nadu Mission with the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) 2024-25 to 2026-27

2. Consequent on the above meeting the Director of Rural Development and Panchayat Raj in the letter 2nd read above has sent draft guidelines on convergence of Green Tamil Nadu Mission with the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) 2024-25 to 2026-2027 and requested the approval of the Government thereon.

...2

3. The Government after careful examination, have decided to accept the draft Guidelines sent by the Director of Rural Development and Panchayat Raj. Accordingly, guidelines for convergence of Green Tamil Nadu Mission with the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), 2024-25 to 2026 -2027 are annexed to this order.

(BY ORDER OF THE GOVERNOR)

GAGANDEEP SINGH BEDI
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT

To
The Principal Secretary to Government Environment, Climate Change And Forests Department, Chennai-9.
The Director of Rural Development and Panchayat Raj, Chennai-15.
The Principal Chief Conservator of Forests, Chennai-32.
The Principal Chief Conservator of Forests & Chief Mission Director, Green Tamil Nadu Mission, Chennai-15.
All District Collectors (except Chennai)
(thro' Director of Rural Development and Panchayat Raj, Chennai-15.)

Copy to:

The Special Personal Assistant to Hon'ble Minister (RD), Chennai-9.
The Senior Private Secretary to Additional Chief Secretary to Government, Rural Development and Panchayat Raj Department, Chennai-9.
Stock file / Spare copy

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SECTION OFFICER

ANNEXURE 10

Annexure

G.O.(Ms)No.153, RD&PR(CGS.1) Department, dated 03.10.2024.

Guidelines for Convergence of Green Tamil Nadu Mission with Mahatma Gandhi National Rural Employment Guarantee Scheme

The Forest department has proposed to converge Green Tamil Nadu Mission with Mahatma Gandhi National Rural Employment Guarantee Scheme(MGNREGS) for raising of seedling in Nursery and Plantation of saplings at selected sites.

The RD&PR department has studied the Project report and it has been decided to involve MGNREGS workers in both "Raising of seedlings in Nursery" works and "Plantation and maintenance of Seedlings" works proposed to be taken - up under convergence.

For the works taken up under convergence, Forest Department will be the Implementing Agency. The advantage of this convergence is that healthy seedlings will be developed under the supervision of the competent Forest Department officials and the seedlings will be made available to the Rural Local bodies for greening up mission on the first priority basis. The guidelines for convergence of Mahatma Gandhi Rural Employment Guarantee scheme with Green Tamil Nadu Mission in accordance to MGNREGS norms are drafted as under:

1. **Convergence works – Roles of Department**

Forest Department (Implementing Agency)

It shall be responsible for,

- Identification of sites for Nurseries and Plantation activities
- Creation of infrastructure for Nursery works
- Preparation of Estimates
- Accordance of Technical Sanction
- Implementation at Site

Rural Development and Panchayat Raj Department

It shall be responsible for,

- Accordance of Administrative Sanction
- Allocation of MGNREGS workers based on the demand
- Creation and Completion of work in NREGASoft

2. Selection of locations

The following points shall be considered during the selection of locations,

- Sites shall be in the rural areas.
- Sites shall be within 5 Km from the residence of workers.
- Lands vested with Forest Department/Panchayats/other rural local bodies shall be selected.
- In case of non-availability of above categories of land, the nursery may be taken up in private land in rare cases. However, the rent for such land should be met out by the Forest Department.
- For plantation works, as per Annual Master Circular under MGNREGS: Afforestation, including ANR - Assisted Natural Regeneration (with integrated soil & moisture conservation works), tree plantation and horticulture activities can be taken up under Mahatma Gandhi NREGS on common, forest and private lands (of households listed in para 5 of Schedule – I). The details of lands are as under:

    i. Degraded Forest lands,
    ii. Waste lands,
    iii. Public and community lands, pasturelands,
    iv. Along riverside, canals and embankments,
    v. Along PMGSY roads and other roads,
    vi. Private lands of households listed in Para 5 of Schedule-I of MGNREGA Act (block plantation or on bunds of agricultural fields, backyard/homestead plantation).

The selected sites shall be presented before Block level Co-ordination committee and shall be approved.

3. Creation of Infrastructure

In case of Nursery works, necessary infrastructure like Green Net, Fencing, water sources, etc have to be put up by the Forest Department itself from its funds.

4. Grama Sabha Approval

- Once the sites are finalized, the details of sites shall be communicated by the Forest Range Officer to the concerned BDO(VP).
- BDO(VP) shall ensure the Grama Sabha approval for taking up the convergence works in the selected sites and shall include the works in the Labour Budget.

5. Funding Pattern

5.1. For Nursery works

Sl. No	Description of Works	Fund shall be met out from	
1	Preparation of nursery site by clearing and levelling the site	MGNREGS	
2	Procurement of seeds	MGNREGS	
3	Procurement of poly bags	MGNREGS	
4	Formation of germination bed	MGNREGS	
5	Watering the germination bed	MGNREGS	
6	Collection & supply of sand, silt and red soil according to the requirement for preparation of soil mixture - 4/5th of the total volume	MGNREGS	
7	Cost and transport of Farm yard manure for filling bags - 1/5th of total volume	MGNREGS	
8	Preparation of soil mixture by breaking clods, sieving and mixing of fertile earth (including red soil, silt and sand etc., according to requirements) and farmyard manure, heaping at the site and filling in polythene bags arranging bags in beds and pricking out the seedlings. (Excluding cost of earth and farmyard manure)	MGNREGS	
9	Procurement of Vermi compost @ 35 gm per seedlings	MGNREGS	
10	Procurement of VAM @ 15gm per seedlings	MGNREGS	
11	Procurement of Azospirillum @ 6 gm per seedlings	MGNREGS	
12	Procurement of Phosphobacteria @ 6 gm per seedlings	MGNREGS	
13	Watering the container plants with rose can	MGNREGS	
14	Weeding, grading and replacement of causalities in the bags	MGNREGS	
15	Land Rent for keeping nursery in private land (to be rare)		Forest Dept
16	Cost of water for watering the container seedlings from private well.		Forest Dept
17	Engaging of nursery protection mazdoor		Forest Dept
18	Contingencies for application of pesticides and Pancha Kaviya etc., and foreseen items if any		Forest Dept

5.2. For Plantation works

Sl. No	Description of Works	Fund shall be met out from	
1	Digging of pits in tank bed areas and plains	MGNREGS	
2	Loading and unloading the container plants in private vehicle	MGNREGS	
3	Transport of container seedlings in private vehicles		Forest Dept.
4	Distribution of seedlings from where seedlings are stocked to the planting spot (up to 500m)	MGNREGS	
5	Planting the container plants by refilling pits	MGNREGS	
6	Replacement of Casualities by reopening failed pits & planting the seedling	MGNREGS	
7	Scrap weeding for 1m and soil working 15 cm depth around the each plant and removing the grass roots away from the site.	MGNREGS	

6. Estimates Preparation and Sanction

Under convergence works, since MGNREGS workers are to be involved, Administrative Sanction shall be accorded by the District Collector.

However, in view of the Forest Department being the implementing agency, the technical sanction shall be accorded by the competent authority of the department as per the prevailing norms. The step by step procedure to be followed for preparation and sanction of estimates is as under:

6.1. Preparation of Estimates

Preparation of Estimate for raising of saplings shall be done by the Forest Range Officer with the following considerations:

i. Site condition and Requirement of saplings need to be analysed.
ii. For the items available in RSoR and PWD SoR, those rates shall be adopted.
iii. For the items not available in RSoR and PWD SoR, but available in Forest SoR, rates shall be adopted based on Forest SoR.
iv. For the items not available in both RSoR & Forest SoR, rate shall got approved from the District Procurement Committee.
v. Site drawings, FMB & Adangal shall be attached.
vi. Calculation sheet for No. of Mandays required shall enclosed.

vii. Abstract of items to be met out under MGNREGS funds and Convergence fund from Forest Department shall enclosed.

6.2. Scrutiny of Estimates

The estimates prepared by Forest Range Officer shall be submitted to BDO(VP). The Assistant Engineer(RD)/Overseer(RD) concerned have to verify the estimates.

6.3. Estimate Approval

- The Forest Range Officer shall submit the finalised estimate incorporating the corrections suggested by the Assistant Engineer(RD)/Overseer(RD) and shall obtain the approval from the concerned authority.
- The approved estimate shall be submitted to the BDO(VP) by the Forest Range Officer

6.4. Administrative Sanction

- BDO(VP) shall forward the proposal to DRDA for Administrative Sanction.
- At DRDA Office, the estimates shall be verified and Administrative Sanction(AS) shall be obtained from the District Collector by the Additional Collector(Dev)/Project Director, DRDA.

6.5. Technical Sanction

- AS accorded details shall be communicated to BDO(VP) concerned by the Additional Collector(Dev)/Project Director, DRDA.
- BDO(VP) shall communicate the AS details to the Forest Range Officer.
- The Forest Range Officer shall obtain the Technical Sanction from the concerned authority of Forest Department.

7. Work Execution and Implementation at Site

7.1. Work Execution

The details of Technical Sanction accorded works shall be communicated to BDO(VP) by the Forest Range Officer. It is the responsibility of BDO(VP) to create work ID in NREGASoft under Convergence category and to allocate workers for the convergence works following the due procedures of MGNREGS scheme. The step by step procedure of implementation shall be as under:

i. **Work ID Creation** - BDO(VP) shall create work ID under convergence mode in NREGASoft following due procedures.

ii. **Geotagging of work** - Before execution stage shall be taken using BHUVAN App by the Forester.For this purpose, login ID will be created for the Forester by BDO(VP).

iii. **Demand Generation** - Weekly demand i.e., No. of Mandays required for the week shall be provided to the Gram Panchayat by the Forester. The Gram Panchayat will submit the weekly demand for the convergence works to BDO(VP).

iv. **Work Allocation** - As per the MGNREGA guidelines, BDO(VP) will allocate works for the workers in the demand list submitted by the Gram Panchayat. Accordingly, BDO(VP) will allocate workers for the convergence works.

v. **e-NMR Generation** - Based on the work allocation, e-NMR for the week will be generated by BDO(VP).

Work Co-ordinator (Gram Rozgar Sahayak (GRS)) have to collect the e-NMR from Block Development Officer(VP) for all the works in the Panchayat (on every Wednesday of the week) and shall hand it over to the work mate and shall inform to the Forester.

As per MGNREGS guidelines, **Work mate will be assigned for each work site** by the BDO(VP). He/She is eligible to work from the commencement to the completion of that work or 100 days in a financial year, whichever is earlier.

7.2. Implementation at Site

Since Forest department is the Implementing Agency, Forester shall be responsible for monitoring the work at site. He/She shall give necessary instructions to the work mate regarding the works to be executed at the site.

i. **Attendance** - To ensure the transparency in implementation of MGNREGS works, daily attendance is being taken up through National Mobile Monitoring System application (NMMS app). Work mate will take the attendance twice **(at the start of day** (from 6 am to 11 am) once and **after 4 hours from the time of first attendance)** in a day. He/She will also monitor the workers at that site.

ii. **Measurement of work** - Forester shall record the measurement in M-Book on every Thursday of the week. Forest Range Officer shall do the check measurement before Friday of the week.

iii. **Submission of Bills** - Forester will be responsible for submission of Bills to BDO(VP), ie., on Friday of every week. Bills submitted shall comprise of e-NMR, M-book & Bill form with required documents duly signed by the Forester and Forest Range Officer.

iv. **Generation of FTO & Wage list** - Based on the bills submitted by the Forester, BDO(VP) will generate the wage list & FTO.

v. **Geo-tagging of work** – Geotagging of site during execution stage shall be done by the Forester when 30% to 60% expenditure is done.

vi. **Work completion**

- On completion of work, the Forester shall submit the following documents to BDO(VP):
  - ❖ Certificate from the Forest Range Officer for work completion.
  - ❖ Copy of M-Book
  - ❖ Copy of Work File.
- After verifying the documents, BDO(VP) shall generate the Completion Report from NREGASoft.
- Once the Completion Report is generated, Forester has to geotag the work on completion stage. Under MGNREGS, the work will be completed only if Geo-tagging of completion stage is done.

8. Formulation of Co-ordination Committees

8.1. Block Level Co-ordination Committee

- A Block Level Co-ordination Committee shall be formulated with the following members,
  - Block Development Officer (VP)
  - Assistant Engineer
  - Union Overseer(s) (concerned)
  - Village Panchayat President(s) concerned
  - Forest Range Officer and
  - Forester

- In case of Nursery works, the Committee shall analyse the suitability of site identified in the aspects such as area of the site identified, number of seedlings proposed to raise in the nursery, number of active job card holders in the identified panchayat, total no. of mandays required for the nursery and whether it is possible to provide sufficient mandays under MGNREGS for raising of saplings, etc. After confirming the available mandays, the Committee shall finalise the selected site.
- In case of Plantation works, the Committee shall analyse the suitability of sites identified based on the the number of saplings proposed to plant and soil moisture conservation works proposed in the sites and shall approve the works after ensuring the required mandays for the proposed works are available.
- The Committee shall also conduct meeting every fortnight mandatorily (preferably on Thursday) to ensure the effective implementation of the scheme. It shall monitor the timely submission of bills, payment to workers, etc., at Block level.

8.2. District Level Co-ordination Committee

- At District level, Green Committee under the Chairmanship of District Collector comprising officials from various line departments has already been formulated. However, a separate Committee shall be formulated at District level to dealt with the implementation of works taken up under Convergence of Green Tamil Nadu Mission and Mahatma Gandhi National Rural Employment scheme. This Committee shall comprise of,
    - District Collector
    - Additional Collector(Dev)/Project Director, DRDA
    - District Forest Officer and
    - Executive Engineer(RD)
- The Committee shall be responsible for,
    - Planning and co-ordination of seedlings raising in Nurseries works and plantation works proposed under convergence in the district.
    - It shall also monitor the effective implementation of convergence works at the district level.

- Finalisation of saplings required for plantation activities taken by RD&PR department and shall prepare timeline for raising of the saplings.

9. Measurement of works and Payment

9.1. Measurement of Work

The authority for measurement, check measurement and Super check measurement of the works shall be as under:

Forester	Shall record the measurements of the work in M-book, every week.
Forest Range Officer	Shall do Check measurement for the work, every week.
District Forest Officer	Every fifth successive bill has to be super-checked, mandatorily by the DFO.

9.2. Payment

9.2.1.Timeline

Timely payment of wages is mandate in MGNREGS scheme. To ensure this, the following time schedule (T+8) needs to be strictly adhered to:

Steps	Activity	Designation of the person responsible	Time Line
I	Closure of Muster Roll (MR)	WorkMate	T
II	Handling over of Muster Roll To Technical Person	WorkMate	T+1(Thursday)
III	Measurement of Work	Forester	T+2, T+3 (Friday & Saturday)
IV	Check Measurement	Forest Range Officer	T+4, T+5 (Sunday & Monday)
V	Handing over the bills to BDO(VP)	Forest Range Officer/Forester	T+5 (Monday)
VI	Field Verification	Overseer/Dy. BDO	T+5 (Monday)
VII	MIS entry of Muster Roll	Computer Assistant	T+6, T+7 (Tuesday & Wednesday)
VIII	Generation of FTO (1st Signatory)	Deputy Block Development Officer (MGNREGS)	T+8 (Thursday)
IX	Generation of FTO (2nd Signatory)	Block Development Officer (Village Panchayats)	

9.2.2. Material Procurement

Under MGNREGS, Labour component i.e., wages for workers will be paid to the workers account through FTO. Wherever, in case of payment for material component like Citizen Information Board, the payment will be made to the vendors directly.

For this purpose, the Forest Range Officer shall submit the details of vendors to BDO(VP) and shall ensure that the vendor has been registered along with the GST TIN details in NREGASoft.

10. Geotagging of work

- All works shall be geotagged in three stages viz., Before commencement, During execution (when expenditure incurred is above 30% but less than 60%) and After completion (within 30 days from the date of generation of completion report), using the GeoMGNREGA BHUVAN application.
- If 60% expenditure is incurred, but "during execution geotag" is not captured till that time, then no further expenditure can be made.
- Forester shall be responsible for timely Geotagging of works in 3 stages viz., Before, During and After completion.
- BHUVAN ID will be created for the Forester by BDO(VP).

11. Maintenance of Work File

- As per the MGNREGS guidelines, work file needs to be maintained for all works with the following documents :

1. Copy of the Annual Action/ Shelf of Projects
2. Copy of Technical Estimate and Design
3. Technical Sanction
4. Administrative/Financial Sanction
5. Convergence Funds/ Inputs, if any
6. Demand Application Form
7. Work Allocation Form
8. Copy of filled e-Muster Rolls
9. Muster Roll Movement Slip
10. Copy of Measurement Book
11. Material Procurement Document and Usage
12. Copy of Wage List
13. Copies of Wage and Material Payment FTOs
14. Material Vouchers and Bills

15. Photograph of the Project/Work at three stages- before, during and after
16. Geo-tagged Photograph of the Asset(atleast one stage)
17. Work Completion Certificate
18. Copy of Social Audit Report of the work

Forester shall be responsible for:-

- maintenance of work file at work site for all ongoing works
- keep work files at office for all completed works since the work file need to be submitted at the time of audit of works.
- Government of India is planning to implement e-work file. If e-work file module has been enabled, then the Forester is responsible for maintenance of e-work file.

12. Citizen Information Board

Citizen Information Board shall be kept at the work site in 3x4 feet with all necessary information as per the framework given by the Government of India. Since this is a community type structure, the cost of Citizen information Board will be fixed at Rs.4,500/- per unit. In case, if any existing Government building is available at the plantation site, then the Citizen Information Board should be inscribed as wall painting at the cost of Rs.1000/-. The cost of the information board shall be included in the estimate itself.

13. Wage Rate and Out-turn

The Government of India is fixing labour wage rate for the state, every year. Wage Rate for MGNREGS workers in Tamil Nadu is Rs.319/- for the year 2024-25 and wage is to be paid based on the work undertaken based on Rural Schedule of Rates. For the subsequent years, the rate fixed by the Government of India has to be adopted.

The Forester is responsible for monitoring the workers at site and to ensure the necessary outturn for full wage rate.

14. Training

The training for MGNREGS workers for raising saplings shall be given by Forest Department. Funds for training will be meet out by Forest Department.

15. Monitoring of Works

Monitoring of the Nursery works taken-up under convergence of MGNREGS shall be done by the Forest Department as per the prevailing norms of the department. However, since the labour component is being met out under MGNREGS, Overseer/Deputy BDO concerned shall inspect the site before making payment, every week. It is to be ensured that the inspection by Overseer/Deputy BDO is done as per the timeline i.e., on Monday of every week.

16. Maintenance of Nursery Registers

The register for nurseries being used in the Forest Department shall be maintained. However, if no such registers are maintained by the Forest Department, then the registers approved by the Director, Rural Development and Panchayat Raj shall be maintained. Forest Range Officer shall be responsible for maintenance of registers.

17. Maintenance of Estimates and Allotment Register

Block Development Officer will maintain Estimates and Allotment Register(E&AR) for the works executed by Rural Development and Panchayat Raj Department. For these convergence works, the EAR shall be maintained by BDO(VP). The details of material components covered under MGNREGS will be updated in the register by BDO(VP). However, for the components funded by Forest Department, necessary documents need to be communicated to BDP(VP) by the Forest Range Officer so as to complete the work entries in Estimates and Allotment Register.

18. Saplings Distribution for RD&PR Department

Rural Development and Panchayat Raj Department is implementing various plantation activities under MGNREGS scheme. To associate these plantation activities, RD&PR department has established Block level and Village Panchayat level nurseries engaging members of Panchayat Level Federation(PLF).

However, the saplings raised under these nurseries are generally not sufficient to meet out the plantation activities taken up by the department.

Hence, if Rural Development and Panchayat Raj nurseries do not meet the requirement of saplings for the plantation works implemented by the department, then the saplings raised in the nurseries established by Forest Department under the convergence of MGNREGS shall be utilised. In such case, the saplings shall be distributed to Rural Development and Panchayat Raj Department free of cost. **The first claim of the saplings will got to RD&PR Department and only if the Additional Collector (Dev)/Project Director, DRDA concurs, will the saplings be used by the Forest Department elsewhere.**

19. Maintenance of RD&PR Nurseries – Technical Assistance

As mentioned earlier, Rural Development and Panchayat Raj Department have established Block level and Village Panchayat level nurseries. Forest Range Officers shall also be instructed to provide the technical assistance/guidance related to raising of saplings to the member in-charge of the nursery, whenever required. Periodical training programme shall also be conducted for PLF members/officials involved in Nursery raising to develop their skills.

20. Audit of works

All MGNREGS works are to be subjected to Social Audit, CAG Audit and Internal Audit by MoRD. Hence, the Forest department officials are bound to attend the audit with required documents. Forest Range Officer/Forester is responsible to give reply and settle the paras raised at the time of audit.

21. Adherence to MGNREGS Guidelines

These guidelines have been prepared adhering to the MGNREGS guidelines. However, if any modification/updation is made by Government of India in future, the officials are to adopt such modifications/updation as per the communication issued by the Rural Development and Panchayat Raj Department.

GAGANDEEP SINGH BEDI
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT

//True copy//

Section Officer