

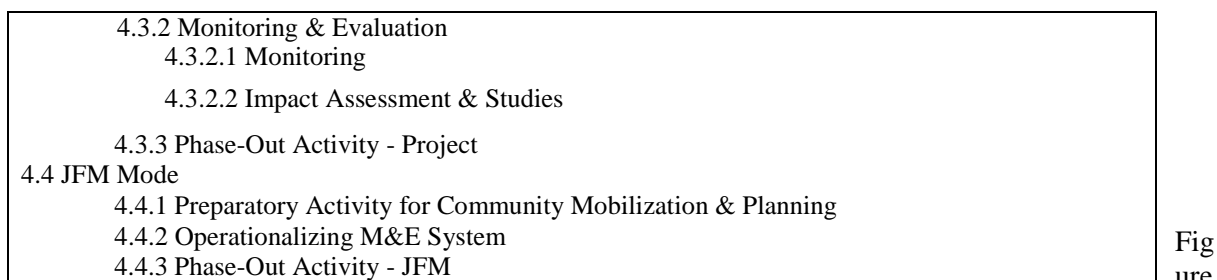
Detailed Scope of Work

1. Overview of the Proposed Project

The overview of the project components is as given below.

Table: Outline of Project for Sustainable Catchment Forest Management in Tripura (SCATFORM)

1. Sustainable Forest Management
1.1 Department Mode <ul style="list-style-type: none"> 1.1.1 Improvement of Forest Nurseries 1.1.2 Application of Plantation Models 1.1.3 Habitat Improvement in Gumti Sanctuary 1.2 JFM Mode <ul style="list-style-type: none"> 1.2.1 Establishment of Decentralized People's Nursery 1.2.2 Application of Plantation Models 1.2.3 Eco development
2. Soil and Moisture Conservation
2.1 Construction of Check Dams 2.2 Erosion Prevention Works combined with Check Dams 2.3 Assessment of Soil and Moisture Conservation Model
3. Livelihood Development
3.2 Community Organizations for Livelihood Development 3.3 NTFP based Livelihoods 3.4 Agro-forestry based Livelihoods 3.5 Livestock and Fish Farming based Livelihoods 3.6 Ecotourism development 3.7 Revolving Fund to JFMC/ EDC for small IGA
4. Institutional Strengthening
I. Institutional Strengthening <ul style="list-style-type: none"> 4.1 Department Mode <ul style="list-style-type: none"> 4.1.1 Infrastructure and Mobility Enhancement 4.1.2 Enhancement of GIS/ MIS facilities 4.1.4 Gender Mainstreaming 4.1.5 Enhancement of Environment and Social Considerations 4.1.6 Capacity Development of Forest Department 4.1.7 Forest Research 4.2 JFM Mode <ul style="list-style-type: none"> 4.2.1 Infrastructure and Mobility Enhancement 4.2.2 Capacity Development of Community Institutions II. Project Management <ul style="list-style-type: none"> 4.3 Department Mode <ul style="list-style-type: none"> 4.3.1 Preparatory Activity for Project Implementation <ul style="list-style-type: none"> 4.3.1.1 Institutional Set-up and Procurement 4.3.1.2 Map preparation 4.3.1.3 Batch-wise Approach 4.3.1.4 Preparation of Beat Forest Basic Plan 4.3.1.5 Baseline Surveys 4.3.1.6 Identification of RoFR and JFMC lands 4.3.1.7 Preparatory Activity for Community Mobilization & Planning 4.3.1.8 Review and Revision of Project Manual 4.3.1.9 Orientation of Project Staff



shows the organizations of project components and flow of the phases. The project under formulation is planned to have implementation period of 10 years, whereas the loan agreement period will be 13 years after the effectuation of the loan agreement. The entire project implementation period will have three phases, viz., Preparatory Phase (18 months), Implementation Phase (84 months), and Sustainability Phase (Phase out) (18 months).

The project has 4 key components viz., 1) Sustainable Forest Management, 2) Soil and Moisture Conservation, 3) Livelihood Development, 4) Institutional Strengthening. A supplemental element to the project is Consulting Services.

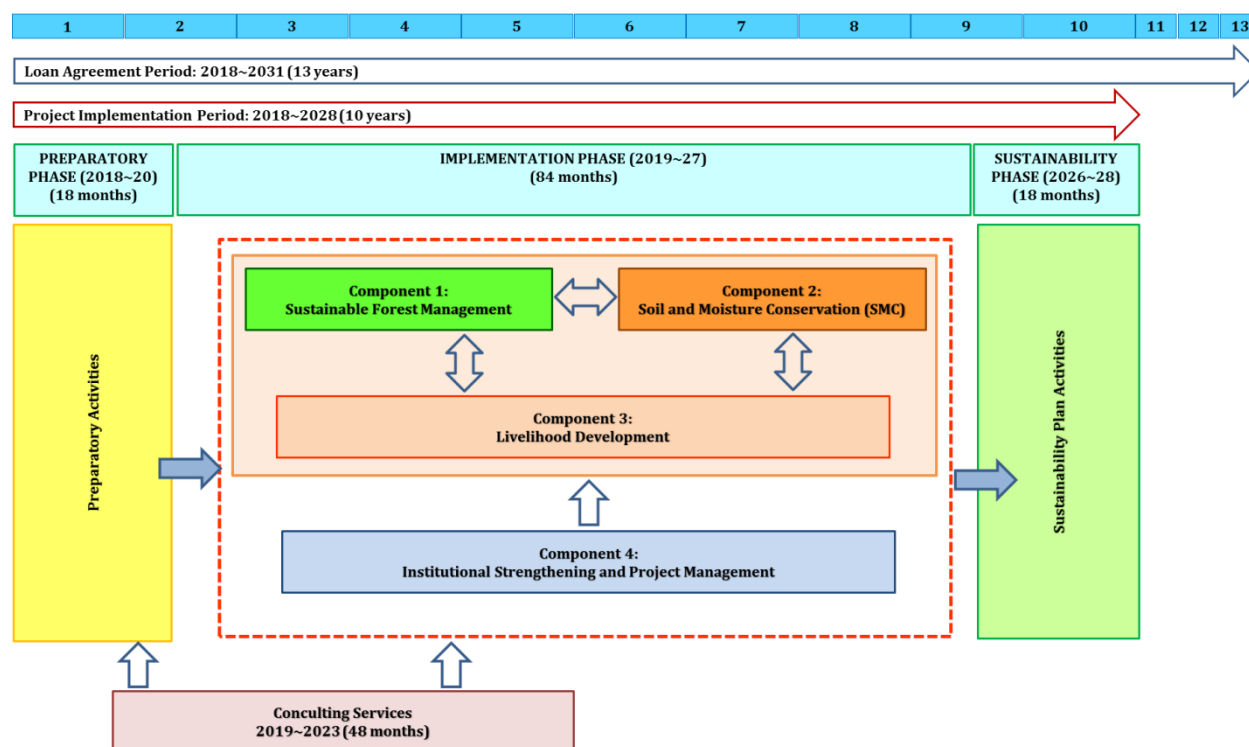


Figure: Organizations of Project Components and Flow of the Phases

Part A: Preparatory Phase

Preparatory Activities are included as part of Component 4: Institutional Strengthening, and the timeline to implement the preparatory activities will be first 18 months of the project implementation i.e. during the financial years 2018-19 and 2019-20 (1½ years).

Part B: Implementation Phase

Four key components are organized under two categories –

- a) Category 1: Components that will act as means to achieve the results viz., components 1, 2 & 3, and

- b) Category 2: Supporting and cross-cutting components to strengthen and support category 1 components to perform and achieve results.

These key components are depicted under the Implementation Phase that will be effective during financial years 2019-20 through 2026-27 (7 years). The inter-relationship between the Components 1 & 2 will be to play complementary and supplementary roles, whereas Component 3 will be cross-cutting and will strengthen both Components 1 & 2. Thus, the first three components are kept in one red dotted box.

The component 4 will strengthen and provide implementation efficiency to the interventions proposed under the first three components in the box.

Part C: Sustainability Phase

The sustainability phase has been planned from financial year 2026-27 onwards till project closure in year 2028 (1½ years), however the phase-out activities will be initiated batch-wise after completion of the batch cycle i.e. if the Batch is planned to be implemented during 2019~2024, the phase-out activities will get initiated soon after 2024.

Part D: Consulting Services

The consulting services has been planned for 48 months (4 years), and it is likely that the consulting services will be procured by PMU during the first year (the second financial year) to support and assist PMU during the preparatory phase, and during initial years of the project implementation in setting-up processes, systems and guidelines.

2. Project Objective and Approaches

2.1 Project Approaches

(1) Catchment protection

The project will be implemented mainly in upper catchments where forest is degraded and poverty issues are more severe. Such areas are mostly less populated and accessibility may not be good enough. The project will focus on the upper catchments and carry out forest management, soil and moisture conservation and livelihood development activities through enhanced presence of TFD in remote areas with organized JFM structures.

(2) Developing Beat Action Plan and Micro Plan following participatory approaches

In order to carry out project activities more effectively, the project will be implemented at Forest Beat wise; Forest Beat is the smallest administrative unit of TFD with which JFMC makes agreement for managing allocated forestlands. Beat Forest Basic Plan (BFBP) will be prepared for selected beats. Each beat will be divided into catchments of tributaries. The BFBP will include basic information of the Beat and forest land use and soil and moisture conservation plans.

Micro plans of JFMCs will be prepared based on the BFBP through participatory processes with forest community members.

(3) Ensuring access to land resources

Agroforestry development on demarcated RoFR lands

Tripura is the pioneer state of RoFR. The project will demarcate the RoFR lands for the owners to utilize them with agroforestry. The project will make groups of RoFR landholders (Joint Livelihood Groups: JLGs) to treat the area¹.

¹ In TFIPAP, 3.5 ha RoFR landholders with 4 households were grouped as minimum size.

JFM formation for forest demarcation

The project will form JFMCs (or work with existing JFMCs) wherever forest dependent communities are present, demarcate forest lands to them and carry out afforestation, assist natural regeneration, NTFP plantation, and soil and moisture conservation activities with them.

(4) Protection of existing forests

In Tripura, within the forest area of 260,210 ha allocated to nearly 1,000 JFMCs, 45% (118,181 ha) is afforested areas and the rest is natural forest. Thus, it is important to protect natural forests. It is pointed out that major causes of the degradation in natural forests are illicit felling, encroachment, and forest fire². The project will work on protection of existing forests in collaboration with JFMCs/EDCs which report illegal activities in their own and neighbour forests.

(5) Enhanced support for group business development and developing partnerships for processing and marketing

The project will promote NTFP production with sustainable harvest techniques and medicinal plants cultivation as well as agriculture, fishery and livestock production through forming SHGs (or directly by JFMC itself) for simple processing and advanced processing and marketing with larger investment.

(6) Strengthening IT based technologies for planning and decision making

The project will incorporate advanced technologies of GIS and MIS and integrate them into forest management and soil moisture conservation³ taking advantages of the project outcomes from TFIPAP⁴. The working plan will be updated with these technologies.

(7) Capacity development at various level

The project will organize project related personnel at various levels (Project staff (PMU, Livelihood Coordinator, Community Organizers, Field Facilitators), TFD officers, and JFMC/SHG/JLG members), clarify the needs of capacity development at each level, and demonstrate strong commitments for capacity development⁵.

(8) Support to forest communities formed in TFIPAP

Although it is limited in scale, in order to ensure the sustainability of the project activities (planted trees, soil and moisture conservation measures, IGAs, etc.), the project will support forest community organizations organized in TFIPAP. The support to such JFMCs/EDCs will include participation in capacity development activities, organized marketing, grouping for value addition, etc.

(9) Well planned inter-sectoral convergence to support achieving project goal

The project will emphasize on convergence which supports to achieve the project goal. The convergence framework will be prepared with line departments. The important convergence includes: MGNREGA for Forest management and agro forestry as well as construction of check dams under soil moisture conservation. Moreover, convergence with Department of Agriculture, Horticulture Fishery, Animal Resource Development Department would be ensured. For overall social and economic well being convergence with schemes like Pradhan Mantri Suraksha Bima Yojna (PMBSY), PM Jeevan Jyoti Bima Yojna and Atal Pension Yojna would be emphasized. Pradhan Mantri Ujjwala Yojana, Ministry of Petroleum and Natural Gas, Govt of India would be another convergence to facilitate women's access to LPG cylinders in the project areas.

² The working plans and personal communications from the DFOs/SDFOs.

³ The project will closely collaborate with Tripura Satellite Application Centre (TSAC).

⁴ GIS/MIS system of TFIPAP will be integrated into the new system.

⁵ The project will set up a target percentage of spending for capacity development in the total project budget.

(10) Organizing ecotourism development for income generation and nature education for forest communities

The project will organize ecotourism development of the state by formulating new policy, institutional development and funding. Forest dependent communities are encouraged to generate benefit for their livelihood as well as participate in nature conservation and environmental education activities.

(11) Well organized outcome monitoring and impact evaluation

The project will set up scientifically biophysical and socio-economic operation and effect indicators (forest cover/composition/soil moisture/carbon stock, and water accessibility/awareness and knowledge of local community, etc.) and monitor them during the project period and utilize the feedback to reorient the project activities.

(12) Gender mainstreaming

In order to understand the status of women in project areas and policy regime (TFD and relevant other policies) on gender issues and propose desired vision to ensure better adaptation of gender mainstreaming in the project, the project will incorporate a gender mainstreaming action plan which specify action points, to be considered for a set of indicators for monitoring. The main points to be highlighted are: women leadership program and social and economic up lift of women.

Component 1. Sustainable Forest Management

To enhance quality of forest and its management in the target catchment, the following activities will be conducted under Component 1. Sustainable Forest Management during the project period:

Table: Activities in Sustainable Forest Management

Sec. No.	Activity	Site selection	Survey/ design	Construction/ O&M
C1.1	Department Mode			
C1.1.1	Improvement of Forestry Nurseries	TFD	TFD	TFD
C1.1.1.1	High Tech Nursery	TFD	TFD	TFD
C1.1.1.2	Central Nursery	TFD	TFD	TFD
C1.1.2	Application of Plantation Models			
C1.1.2.1	Filter Strip & River Bank Plantation	TFD	TFD	TFD
C1.1.3	Habitat Improvement in Gumti Sanctuary	TFD	TFD	TFD
C1.2	JFM Mode			
C1.2.1	Establishment of Decentralized People's Nursery	JFMC with Beat Office in consultation with RMU	JFMC with Beat Office	JFMC
C1.2.2	Application of Plantation Models			
C1.2.2.1	Artificial Regeneration (AR) on Shifting Cultivation areas	JFMC with Beat Office in consultation with RMU	JFMC with Beat Office	JFMC
C1.2.2.2	Aided Natural Regeneration (ANR) on Lower Catchment	JFMC with Beat Office in consultation with RMU	JFMC with Beat Office	JFMC
C1.2.2.3	Teak Plantation Management	RMU in consultation with DMU	JFMC with Beat Office	JFMC
C1.2.2.4	Silvi-Pastoral Plantation on Open Forests/Grasslands	JFMC with Beat Office	JFMC with Beat Office	JFMC

Sec. No.	Activity	Site selection	Survey/design	Construction/ O&M
C1.2.3	Eco development	EDC with assistance of LC/CO	EDC with assistance of LC/CO	EDC

Respective activities in the sustainable forest management are described hereunder:

C1.1 Department Mode

C1.1.1 Improvement of Forest Nurseries

Background

Under TFIPAP, there were two types of nurseries namely central nurseries (directly under supervision of TFD) and decentralized people's nursery (managed by JFMC members but had an indirect control of TFD). Some of the central nurseries were improved with various facilities and they were termed as improved nurseries. In TFIPAP there were 9 newly established central nurseries, 8 improved central nurseries and 413 decentralized people's nurseries (DCPN).

Overview of the activity

Considering that there is an increasing demand for high quality seedlings or saplings with certain quality which is often called Quality Planting Material (QPM) by TFD officials, the following three types of nurseries will be established or improved in the proposed project.

- i. High Tech Nurseries (HTN)
- ii. Central Nurseries
- iii. Decentralized People's Nurseries (DCPN)

Among three of them, HTN and central nurseries will be improved and managed by Department mode and DCPN will be established and managed by JFM mode.

Main features and tentative quantitative target of each type of nurseries are summarized in the table below.

Table: Main Features and Tentative Target for Nurseries

Nursery	Main features	Tentative Quantitative target
High Tech Nursery	Equipped with modern facilities such as seed laboratory to produce seedlings of specific species which require intensive care.	3
Central Nursery	Equipped adequate facilities to produce a large number of seedlings with certain quality	7
Decentralized People's Nursery	Established near plantation sites with small scale	150

Nursery	High Tech Nursery	Central Nursery	DCPN
Main features	Equipped with modern facilities such as seed laboratory to produce seedlings of specific species which require intensive care.	Equipped adequate facilities to produce a large number of seedlings with certain quality	Established near plantation sites with small scale
Tentative Quantitative target	3	7	150

Comparison of three types of nurseries in terms of specification is shown in the table below.

Table: Comparison in Terms of Specifications of Three Types of Nurseries

No	High Tech Nursery	Central Nursery	DCPN
1	Permanent nursery bed	Permanent nursery bed	Temporary nursery bed
2	Super structure (iron frame)	Super structure (iron frame)	-
3	Manure mixing space	Manure mixing space	Manure mixing space
4	Hardening chamber	Hardening chamber	-
5	Overhead water tank	Overhead water tank	-
6	RCC road	RCC road	-
7	Labor shed	Labor shed	-
8	Storage chamber	Storage chamber	-
9	Drying shed	Drying shed	Drying shed
10	Vermi compost	-	-
11	Seed germination unit (mother beds)	Seed germination unit (mother beds)	Seed germination unit (mother beds)
12	Office room	Office room	-
13	Visitors shed	Visitors shed	-
14	Fencing	Fencing	Fencing
15	Mist chamber/poly house	Mist chamber/poly house	-
16	Deep tube well with pipe line, submiscible pump & sprinkler	Deep tube well with pipe line, submiscible pump & sprinkler	-
17	Seed testing laboratory including equipment and materials for testing	-	-

The ideal nursery location, which is common for all three types, should fulfill the following requirements:

- Easy accessibility with road communication
- Good permanent water supply or piped water system.
- Good drainage with gentle slope
- Good supply of suitable soil materials
- No chance of flooding
- Not prone to erosion

C1.1.1.1 High-Tech Nursery

a) Construction of Nursery

Objectives

Specific objectives of High Tech Nursery (HTN) are described as below.

- Production of the highest quality seedlings and other plant propagule, especially seedlings of species requiring intensive care such as some bamboo and cane species with the help of advanced technology
- Research on propagation methods of difficult but economically important plants
- Standardization of propagation methodology of rare/endangered/threatened plant species

Demand

The target of production is set against the demand from the field.

Major emphasis will be laid on bamboos as the bamboos are the priority plants for afforestation including river bank plantations which particularly request soil binding function trees and/or bamboos to prevent soil erosion. Bamboos are also important from the view point of income generation. Canes (*Calamus tenuis*, *C. viminalis*, and *C. guruba*) are another species of economically important for

which demand has been increasing against the backdrop of decreasing natural source. Teak and other timber species may also be taken up for quick propagation.

Non-timber tree or shrub species like Indian Goosberry (Amlaki), Indian Myrobalans (*Terminalia chhebula* and *Terminalia bellirica*), Jackfruit, *Moringa officinalis*, *Anthocephalus kadamba*, *Albizia* spp. *Swietenia mahogany*, *Azadirachta indica*, *Smamania saman*, *Ficus hispida* may also be candidates to be raised at HTN.

In addition, planting materials of short gestation NTFP species including edible and aromatic plants viz., Large Cardamom, Sugandhamantri, and Batch shall be raised at HTN.

Specification and Methods

HTNs shall be developed in order to meet the increasing demand of QPM and QPM production is always preferred to be organized locally due to the following reasons: (i) locally available seedlings would definitely have least risk of mortality and transport hazards. (ii) the overall cost for planting material production and transplantation and maintenance can be minimized, and (iii) if planting materials are produced locally there is a minimal chance for juvenile plants to be exposed to different climatic condition. That means the seedlings or saplings following transplantation in the field can experience the same type of agro-climatic condition, it experiences in the nursery and thus the *on-field* casualty rate may be controlled. From what have been mentioned above, HTN may be proposed for at least one in each district except Dhalai District under the proposed project.

HTN will be developed by improving some of the existing central nurseries including those established or improved under TFIPAP taking advantage of ideal sites for large scale nurseries. Upgrading existing nurseries also can save the cost comparing establishing new ones. For example, the central nursery of Kanchanpur, (North District), Amarapur central nursery of Udaipur District may be upgraded into HTNs.

Facilities and equipment to be provided or installed in HTN are shown in the following table. There should be a production area of at least 1.5 ha and the targeted maximum production capacity should be 500,000 planting material.

Steps

HTN will be developed following the steps shown below.

Step 1: Select some of the existing central nurseries for upgrading to HTN based on the following criteria: location (within or near the project target ranges), conditions of a nursery (relatively well equipped and maintained), and capacity of Range office in terms of qualified officials for nursery management which would be judged by the current conditions of the central nursery. Selection will be made strategically by the headquarters of TFD involving related divisions such as Planning & Development Division and Research Division in consultation with DFOs in targets districts.

Step 2: Check the current conditions of the selected nurseries and identify facilities and equipment to be improved.

Step 3: Provide or install the facilities and equipment identified by step 2.

Responsibilities

HTN will be operated directly by TFD. As mentioned above, the headquarters of TFD, especially relevant divisions such as Forest Research Division and Plannning and Development Division will be responsible for selecting sites or central nurseries to be upgraded to HTN. After the selection, Range Officer in a range where HTN is developed will be responsible for maintaining HTN including production of seedlings under supervision of SDFO and DFO.

Monitoring

Range Officer shall keep a record namely Nursery Journal which records work wise expenditure at the nursery. RMU will report the status of nurseries and the number of stock of seedlings to DMU through Sub-DMU every month.

Sustainability

After the termination of the project, TFD will maintain HTN with its own budget while generating revenue through sales of seedlings to other schemes such as Integrated Forest Management (IFM) and Central Assisted Sponsored Project (CASP) under National Afforestation Programme (NAP). The nurseries will also provide seedlings to plantations established with support by MGNREGA through convergence. This will also secure the sustainability of HTN.

b) Seedling Production

Objective

Objective of this activity is to produce seedlings in order to meet demand for the highest quality of seedlings, especially those species requiring intensive care having economic value and endangered species.

Methods and Steps

<1st Year production and maintenance>

Step 1: Collect or procure seeds from reliable sources. Examine quality of seeds at a seed laboratory upon necessity.

Step 2: Prepare mother beds including breaking clods, removing foreign materials, mixing sand with decomposed cow dung/ compost, and sow seeds and make watering.

Step 3: Collect top soil, break clods, remove foreign materials, mix soil with sand and manure, and fill up poly bags with the mixed soil.

Step 4: Prick out seedlings from mother beds and transplanting in poly bags and water.

Step 5: Fix temporary sheds

Step 6: Conduct weeding and restacking vacant poly bags.

Step 8: Water through the winter season/dry period as per necessity.

<2nd Year Maintenance>

Step 1: Water seedlings.

Step 2: Harden seedlings at a hardening chamber.

Responsibility

Range officer will be responsible for seedling production under supervision of Sub-DMU/DMU.

C1.1.1.2 Central Nursery

a) Improving existing central nurseries

a-1) Construction of Nursery

Objective

The specific objective of improving existing central nurseries is to produce a large number of seedlings with reliable quality for establishment of plantations under the project by making the best use of existing nurseries.

Methods and Specifications

As mentioned above, central nurseries will be developed by improving the existing central nurseries. The equipment or facilities to be provided to or installed in a central nursery are shown in Table: Comparison in Terms of Specifications of Three Types of Nurseries.

Above all, the following facilities may need to be improved or additionally constructed: iron frame of shed nets, overhead water tank, sufficiently large composting unit, labour sheds, drying shed, office building and visitors' shed if needed. The source of water for a nursery should be secured by digging a tube well and installing a submersible pump if necessary.

Steps

Step 1: Select some of the existing central nurseries to be improved based on the following criteria: location (within or near the project target ranges), conditions of a nursery (relatively well equipped and maintained), capacity of Range office in terms of qualified officials for nursery management which would be judged by the current conditions of the nursery. Selection will be made by the headquarters of TFD involving related divisions such as Planning & Development Division and Research Division in consultation with DFOs in targets districts.

Step 2: Check the current conditions of the selected nurseries and identify facilities to be improved by Range Officer with guidance by SDFO.

Step 3: Improve facilities and equipment identified by step 2.

Responsibility

Range officer will have responsibility for improvement and maintenance of the central nurseries under supervision of SDFO/DFO.

Sustainability

Sustainability of the central nurseries improved under the project will be secured in the same manners as described in C1.1.1.1.

b) Seedling Production

Objective

Specific objective of this activity is to produce a large number of seedlings with certain quality for establishment of plantations under the project.

Methods & Steps

Methods and steps of this activities are almost same as those of seedling production at HTN described in section C1.1.1.1. except examination of the quality of seeds at a seed laboratory, intensive care, and hardening seedlings at a hardening chamber.

Responsibility

Range officer will be responsible for seedling production under supervision of SDFO/DFO.

c) Plantation Journal

For creating robust monitoring and recording system, plantation journal shall be prepared by the Project. During the plantation, ID registration for each plantation shall be conducted by RMU. After every plantation, the detailed condition of plantation shall be monitored and uploaded to MIS by RMU for the purpose of analysis of plantation and developing plantation pattern.

C1.1.2 Application of Plantation Models

Five plantation models namely filter strip & river bank plantation, artificial regeneration (AR), aided natural regeneration (ANR), Teak plantation management, and silvi-pastoral plantation, will be applied under the project. A potential site of each plantation model will be identified when Beat Forest Basic Plan (BFBP) is prepared at the preparatory phase of the project. Prior to preparing BFBP, the quantitative target of each plantation model of entire project will be allocated to each selected target beat in responding with the proportion of open forest area in a beat to the total open forest areas of the project target areas. For example, calculation to allocate the quantitative target of ANR to a beat is shown below.

(A) Total open forest area in the project target area: 117,700 ha (the figure is tentative.)

(B) Total area of open forests in each selected Beat (e.g. Nutanbazar Beat): 1,200 ha

(C) Proportion of (B) to (A): $1,200 / 117,700 = 0.01$

(D) Quantitative target of ANR: 13,000 ha (the figure is tentative.)

(E) Target area of ANR for Nutanbazar Beat: $13,000 \times 0.01 = 130$ ha

In making BFBP, first, vulnerable sites to soil erosion and highly degraded forest areas or open forest areas will be identified, by using GIS data. Then, one of the plantation models to be applied and the site will be selected based on the criteria such as crown density, vegetation type before degradation, availability of stumps or seeds from natural vegetation, and demand for particular needs of local residents through a ground survey.

Table: Criteria for Selection of Plantation Model

Criteria Model	Forest condition			Land condition ²	Social condition	
	Teak plantation	% of tree crown ¹	Availability of stumps/ seeds in the field		Maximum distance from village ³	Needs of JFMC
AR Mix	None	Less than 20 %	No	-	5 km	Timber, Fuelwood, NTFP
AR Bamboo	None	Less than 20 %	No	-	5 km	Bamboo
ANR Mix	None	More than 20 %	Yes	-	5 km	Timber, Fuelwood, NTFP
ANR Bamboo	None	More than 20 %	Yes (Bamboo rhizome)	-	5 km	Bamboo
Teak plantation management	Yes	More than 20 %	Yes (teak)	-	5 km	Small wood, fuelwood

Silvi-pastoral	None	Less than 20 %	No	-	2-3 km	Fodder
Filter strip	None	-	-	- Relatively flat areas (around 15 %) -Next to agricultural land or soil eroded areas	-	-
River bank plantation	None	-	-	- Eroded river bank or vulnerable one to erosion - Existence of residential areas or agriculture lands along the river	-	-

Note 1: Percentage of tree crown shall be applied flexibly with +- 5 % differences depending on local conditions.

Note 2: Slope of the land shall be taken into consideration in selecting tree species, not selecting plantation models.

Note 3: According to the current JFM Resolution, JFM shall be established within 2-3 km from village boundaries depending on conditions of the forest. The revision of the distance from 2-3 km to 5 km will be under consideration.

It is assumed that most of filter strips & river bank plantations will be applied outside JFMC project areas since the plantations will be made along rivers and beneficiaries will be beyond JFMC members. On the other hand, other plantation models will be mostly applied in JFM project areas in line with the basic policy of TFD. Hence, application of filter strip & river bank plantation model will be described under Department mode in section below and application of other plantation models will be described under JFM mode in the section below.

C1.1.2.1 Filter Strip & River Bank Plantation

Filter strip and/or river bank plantations shall be established in order to protect or restore riparian areas and ecosystems and mitigate risks of soil erosion at river banks. The outline of filter strip and river bank plantation is shown in the table below.

Table: Filter Strip and River Bank Plantation

Plantation Model	No. of saplings per km	Spacing	Pit Size	Main species	Maintenance period*
Filter Strip	222 bamboos	4.5 m x 4.5 m	45 cm x 45 cm	Barak (<i>Bambusa balcooa</i>), Mritinga (<i>Bambusa tulda</i>), Rupai (<i>Dendrocalamus longispathus</i>), Bari (<i>Bambusa pahymorpha</i>)	4 years
	222 cane	4.5 m x 4.5 m	45 cm x 45 cm	Cane (<i>Calamus tenuis</i> , <i>Calamus viminalis</i> , <i>Calamus guruba</i>)	
	333 trees	3 m x 3m	30 cm x 30 cm	<i>Lagerstroemia speciosa</i> , <i>Dalbergia latifolia</i> , <i>Bombax ceiba</i> , <i>Vitex peduncularis</i> , <i>Gmelina arborea</i> , <i>Moringa oleifera</i>	
River Bank Plantation	666 trees	3m x 3m	30 cm x 30 cm	Bamboo (Barak, Mritinga), <i>Dillenia indica</i> , <i>Gmelina arborea</i> , <i>Vitex peduncularis</i> , <i>Gmelina arborea</i>	4 years

Note: Maintenance period includes maintenance which is conducted in the same year (1st year) of the creation of plantation.

As mentioned above, both filter strip and river bank plantation will be conducted basically by Department mode, since the most of the sites for these plantation models are expected to be beyond JFM project areas and the beneficiaries are not limited to JFMC members. Thus, Range Office shall have key responsibility for application of these plantation models. However, in case the sites are

located in JFM project areas, they will be conducted by JFM mode. In this case, Range Office will take the initiative to apply these plantation models and consult with JFMC. Then, if JFMC agrees, the plan of establishment of the plantation shall be incorporated in their micro plan and JFMC shall be responsible for creation and maintenance of the plantation under supervision of RMU.

a) Filter Strip

Objective

The objectives of development of filter strips are to slow runoff from field, trap and filter sediment, organics, nutrients, pesticide and other pollutants before they reach surface water in streams. In addition, it is also expected to reduce soil sheet erosion as well as increase infiltration of rain water. Filter strip is not familiar to the state, thus, this activity will be implemented as trail to accumulate knowledge and experience of development of filter strips.

Methodology

Filter strips shall be developed along narrow streams with gentle slope around 15 % with 50 feet width strip consisting of plants of different species planted in rows. The design of a filter strip is shown in the figure below. Main components are bamboo, cane, and tree. In the first row towards a stream, 222 bamboos per km shall be planted at spacing 4.5 m x 4.5 m, 222 cane per km shall be planted at spacing 4.5 m x 4.5 m in the second row, and 333 trees per km shall be planted at spacing 3 m x 3 m. After planting bamboo, cane, and trees, maintenance work including weeding is necessary for four years to protect seedlings planted from competition with weeds over light and water.

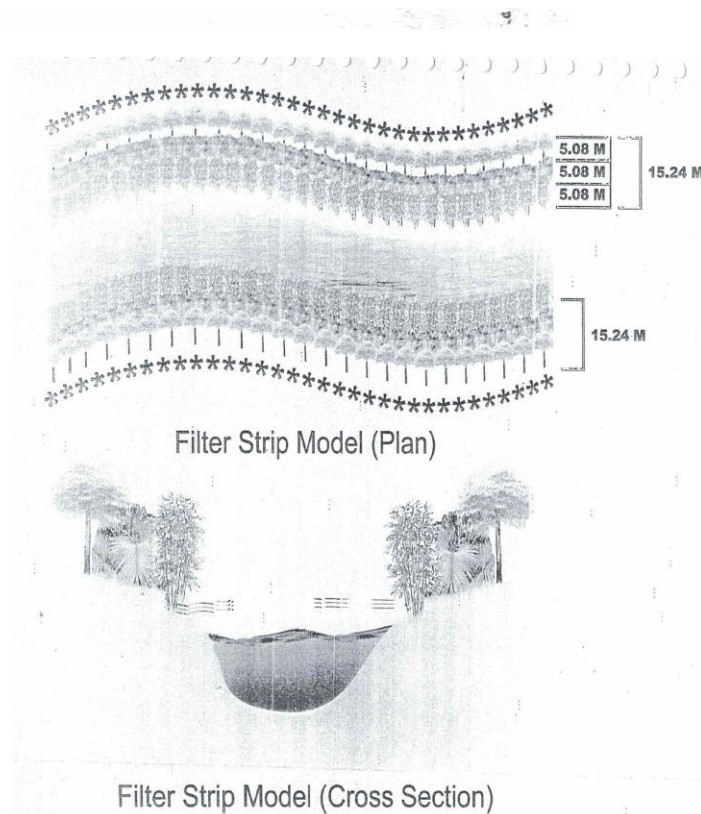


Figure: Filter Strip

Steps

<Preparatory Work>

Step1: Select site based on the following criteria: relatively gentle slope around 15 %, area adjacent agricultural lands or lands used for grazing. Site selection will be conducted by Range Officer in

consultation with DFO and Beat officers. In case a site is located inside a JFM project area, Range Officer will propose a candidate site to JFMC and the site will be decided with agreement of JFMC.

Step 2: Survey the site using GPS instrument and prepare the site including cutting of jungle and disposal of debris etc.

<Creation and Maintenance of 1st year>

Step 1: Digging of pits of 30 cm x 30 cm x 30 cm size up to 222 nos pits each for bamboo and canes with 4.5 m x 4.5 m spacing in a line and 333 nos pits for tree species with 3 m x 3m spacing in a line. The interval between the lines is 5 m.

Step 2: Re-filling of pits after removal of foreign materials, breaking clods and planting stumps/ rhizomes/ seedlings.

Step 3: Closure and fencing with bamboo.

Step 4: First weeding including base cleaning at a radius of 0.5 m and cutting weeds in between the lines.

<2nd year Maintenance>

Step 1: First weeding including cleaning the base at a radius of 0.5 m and cutting weeds in between the lines.

Step 2: Maintenance fencing if necessary.

Step 3: Second weeding including cleaning the base at a radius of 0.5 m and cutting weeds in between the lines.

<3rd year Maintenance>

Step 1: First weeding including cleaning the base at a radius of 0.5 m and cutting weeds in between the lines.

Step 2: Maintenance fencing if necessary.

Step 3: Second weeding including cleaning the base at a radius of 0.5 m and cutting weeds in between the lines.

<4th year Maintenance>

Step 1: First weeding including cleaning the base at a radius of 0.5 m and cutting weeds in between the lines.

Step 2: Second weeding including cleaning the base at a radius of 0.5 m and cutting weeds in between the lines.

Step 3: Making fire line 4 m wide and inspection paths 1 m wide and maintenance of them.

Responsibility

In principle, Range Officer has responsible for site selection, creation and maintenance of this activity under supervision of SDFO/DFO. In case where the activity is conducted in JFM project areas, JFMC will be responsible for creation and maintenance of the plantation with support by Beat Officer under supervision of Range Officer. In either cases, experience and knowledge obtained through development of filter strips shall be compiled and analyzed by PMU to abstract lessons for future development of filter strips.

b) River Bank Plantation***Objective***

The objectives of river bank plantation are to reduce soil erosion at river banks, stabilize river banks, check damage of agricultural fields and habitats from flood, serve shelter belt, and provide nutrients for aquatic organisms.

Methodology

Trees shall be planted in liner way along river banks with a single or double row (s) with spacing 3 m x 3m. After planting, maintenance work including weeding will be carried out for four years to protect seedlings planted in the field from competition with weeds over light and water. Regarding selection of species, soil binding species such as bamboo, cane, tree species such as *Dalbergia latifolia* and *Vitex peduncularis* are recommended. Fruit bearing tree species shall also be planted to enrich river ecosystem.

Step

<Preparatory Work>

Step1: Select a site based on the following criteria: eroded river bank or vulnerable river bank to erosion, existence of residential areas or agriculture lands along the river or lower catchment of the river, or needs of rehabilitation of vegetation from a view point of biodiversity. Site selection will be conducted by Range Officer in consultation with DFO and Beat officers.

Step 2: Survey the site using GPS instrument and prepare the site including cutting of jungle and disposal of debris etc.

<Creation and Maintenance of 1st year>

Step 1: Digging of pits of 30 cm x 30 cm x 30 cm size up to 333 nos pits with 3 m x 3m spacing in a line. The interval between the lines is 5 m.

Step 2: Re-filling of pits after removal of foreign materials, breaking of clods and planting of stumps/ rhizome/ seedlings.

Step 3: Closure and fencing with bamboo.

Step 4: First weeding including base cleaning at a radius of 0.5 m and cutting weeds in between the lines.

<2nd year Maintenance>

Step 1: First weeding in the same way as the 1st year.

Step 2: Maintenance of fencing if necessary.

Step 3: Second weeding including cleaning the base at a radius of 0.5 m and cutting weeds in between the lines.

<3rd year Maintenance>

Step 1: First weeding in the same way as the 1st year.

Step 2: Second weeding in the same way as the 2nd year.

Step 3: Making fire lines 4 m wide and inspection paths 1 m wide and maintenance of them.

<4th year Maintenance>

Step 1: First weeding in the same way as the 1st year.

Step 2: Second weeding in the same way as the 2nd year.

Step 3: Making fire lines 4 m wide and inspection paths 1 m wide and maintenance of them.

Responsibility

In principle, Range Officer will be responsible for site selection, creation and maintenance of river bank plantations. In case, a river bank plantation will be established in JFM project area, JFMC has responsible for creation and maintenance of the plantation with support by Beat Office under supervision of Range Officer.

c) Bandalling

Objective

The objective of construction of bandalling is to stabilize a river bank where a filter strip or a river bank plantation is established through mitigation of intensity of the water flow. Otherwise the effect of a filter strip or a river bank plantation cannot demonstrate fully because the ground on which the plantations are established probably falls down by erosion in the near future due to erosion at the bottom of the river bank by water flow.

Methodology

Bandalling structures will be constructed with bamboo at a certain angle with water flow direction usually 30 to 40 degrees depending on the flow intensity. Around 2 m length of bamboos will be driven into a river bed by 50 cm. Five bamboos with 10 cm spacing will be driven within 1 m of a riverbank. Those bamboos driven into the riverbed will be tightened with vegetative materials in two lines at upper and lower sides. Construction of bandalling structures is not familiar to Tripura, thus, it will be conducted as trial base. Construction work will be conducted during the dry season when the water level is low.

Steps

Step 1: Identify a site for construction of bandalling structures within the target sites of filter strips and river bank plantations. The site for construction of bandalling structures shall be selected based on the following criteria: erosion of the riverbank, depth of a river (less than 1 m in dry season), height of river bank (less than 1.5 m). The selection will be made by Range Officer in consultation with SDFO.

Step 2: Prepare bamboos with 2 m length.

Step 3: Drive the bamboos with 10 cm interval in the riverbed with 30 to 40 degrees towards the water flow.

Step 4: Tight the bamboos with vegetative materials in two lines, upper and lower lines.

Responsibility

Range Officer has responsibility for planning and implementation of this activity. As mentioned above, this activity is not familiar to TFD, hence, DFO shall give a proper guidance to Range Officer through SDFO.

Maintenance and Sustainability

The bandalling structures with bamboo do not require maintenance and sustainability from a long-term perspective since the function of the structures is to stabilize the river bank for a while until a filter strip or a river bank plantation is established and roots of trees or bamboo planted firmly bind soil. The flow of the river will change time to time, so that bandalling structures are not expected to

demonstrate the function long term. From these points of view, maintenance and sustainability is not required for this activity.

C1.1.3 Habitat Improvement in Gumti Sanctuary

Spread across the districts of Dhalai, Gomti and Khowai, the Gumti (also spelt Gomti) Sanctuary was established in 1988 and has an area of 389.54 sq km. This is managed by a Wildlife Warden (SDFO) who reports to the Dhalai DFO; the Wildlife Warden manages three of the five ranges while the two other ranges are managed by SDFOs as follows: Mujnakami range under SDFO Khowai and Tirtamukh under SDFO Gomti. The Wildlife Warden does the overall coordination. The Sanctuary forms the catchment area of Gumti and Khowai Rivers; Gumti River is formed by the confluence of Raima and Saima rivers on the peripheries of the Sanctuary, and at Dumbur it has been dammed to form the Dumbur reservoir where a hydel project is located. In Gumti Sanctuary, the following activities shall be undertaken here.

Table: Habitat Improvement Activities at Gumti Sanctuary

Activity component		Unit	Quantity
1	Fruit trees planting	ha	600 (200ha x 3 years)
2	Grassland development	ha	600 (200x 3 years)
3	Weed (IAS) eradication	ha	330 (110 x 3 years)
4	Constructions		
a	Check dam- earthen Average size: 16m Lx 16.5m Wx 3m H	no	12
b	Gully plugs.	numbers	40
c	Installation of check post and guard's room. Check post: 10m L, 1.3 m H Area of guard's room: 225 sq ft.	number	2
5	Fire line making. Breadth: 5 meters	km	40
6	Boundary marking with pillars. Pillar size: 1.3mx0.5mx0.5m	Number	500

The activities shall be undertaken by the Wildlife Warden (SDFO), and Gumti Sanctuary shall be established as an SDMU within the DMU Dhalai within the project.

Supplemental planting of fruit bearing tree is needed for the arboreal primates whose populations and species diversity are especially good in Gumti. A total of 600 ha shall be taken up for supplemental planting of fruit trees and the sites shall be decided based on the combined criteria of the absence of adequate numbers of fruit bearing trees in the area and the presence of primates in the nearby areas. However, thick forest areas shall not be opened for planting even if fruit bearing trees are absent. The method of planting shall be that of ANR as given in the following section, but the species decided by the food requirement of primates (and other fruit eating animals) and as guided by the indicative list provided. The Wildlife Warden shall decide the species with the prior approval of the PMU. The planting material will be raised through local nurseries.

Grasslands development would both benefit the herbivores and help in soil binding. Blank areas devoid of vegetation and degraded grasslands and some areas overly degraded by shifting cultivation and abandoned by the cultivators will be considered for grassland development. Planting shall be done in a total of 600ha with grass palatable to the herbivores, and the sites and grass species for planting shall be finalised by the Wildlife Warden, with the approval of the PMU. Grass slips shall be planted at a spacing of 1m x 1m and the planting material t will be raised through local nurseries.

Since the Sanctuary does not have a proper check post and there is active movement of people and cattle in the area at least two check points are essential. Borobari and Ramnagar are identified as the sites to install the check posts and guard rooms. Check dams and gully plugging is done with the aim of checking soil erosion and water percolation and to prevent the run off. Average size of the earthen

check dam shall be of 16m Lx 16.5m Wx 3m H. Sites for earthen checkdams and gully plugging shall be decided by the Wildlife Warden based on site assessment, with the approval of the PMU, based on the level of erosion happening and the potential for erosion in future. The Wildlife Warden has suggested- based on the present condition of soil erosion and water run off- 12 earthen check dams and 40 gully plugs. The criteria used for site selection applied for earthen checkdams and gully plugs as given in Component 2 Soil Moisture Conservation shall be applied here too. The activities undertaken in the sanctuary shall be monitored and evaluated by the Chief Wildlife Warden., the Gumti Wildlife Warden shall make periodic reporting on the progress of activities (both financial and physical) to the PMU and the TFD. Ecodevelopment to be undertaken in the sanctuary is described under following section.

C1.2 JFM Mode

C1.2.1 Establishment of Decentralized People's Nursery

a) Establishment of Nurseries

Objective

The main objective of establishment of Decentralized People's Nursery (DCPN) is to produce seedlings to accomplish plantation or afforestation activities under the project, especially in remote areas where transportation of seedlings are costly and difficult.

Target

DCPN will be established by JFMC or SHG through JFMC. Tentative target of establishment of DCPN is 150 considering among every 3 JFMCs one DCPN will be established (the target number of JFMCs to be 405) and DCPNs are to be established during the 1st or 2nd year of the implementation stage after JFMCs will be formulated at the preparatory stage.

Responsibility

JFMC has responsibility for establishment and maintenance of DCPN. Since Beat Officer is the secretary of JFMC, he/she will provide technical support to other members. SHG members under JFMC may be involved in DCPN establishment and management.

Sites of DCPNs must be forest land or community land to avoid any legal complication. In case of establishment of DCPN on forest land, RMU will be responsible for allotment of land under supervision of DMU.

Monitoring conditions of the nurseries and stock of seedlings as well as implementation of nursery works should be done at regular interval by the Beat Officer.

Specification and Methodology

Approximate area of one DCPN will be about 0.25 ha with a capacity of 20,000 seedlings productions.

As much as possible, seeds and other propagules with reliable sources provided by TFD or related agencies such as RFRI and CFERE (Agartala) should be used. The required source materials should be provided to DCPN at a right time so that the target of production may be achieved at right time.

DCPN will be established as temporary nurseries in principle. Following facilities are the minimum requirement for DCPN.

- Temporary bed
- Manure mixing space (compost)
- Drying shed
- Seed germination unit (mother beds)

- Fencing

Steps

Step 1: JFMC members will discuss and decide whether they establish DCPN or not when making a micro plan.

Step 2: If JFMC decides to establish DCPN, potential sites for establishment of DCPN will be identified by JFMC and Beat Office in consultation with RMU. Selection criteria are as follows: near plantation sites, near a village, near road, shady nor exposed area, sufficient sunlight, flat land, availability of water.

Step 3: Cleaning the site, prepare nursery beds of size 4.57 m x 1.12 m (15' x 4').

Step 4: Provide bamboo fencing 4 m height and the sheds.

b) Seedling Production

Objective

Objective of this activity is to produce seedlings of tree species, which are easily produced by villagers, for plantations established in the project target areas, especially in remote areas far from the central nurseries.

Methods & Steps

Methods and steps of this activity are basically the same as those of seedling production at central nurseries described in section C1.1.1.2 though some methods are simpler at DCPN. For example, watering is conducted through sprinkler or water pipes at central nurseries, on the other hand, it is conducted manually at DCPN since DCPN does not have sprinklers.

Responsibility

JFMC will be responsible for seedling production with support from Beat Office under supervision of RMU. Monitoring of seedling production will be conducted along with other activities of JFMC.

C1.2.2 Application of Plantation Models

As mentioned in section C.1.1.2, the following plantation models will be mostly applied to JFM project areas in line with the policy of TFD. Thus, applications of the following plantation models are described in this section under C1.2 JFM Mode.

C1.2.2.1 Artificial Regeneration (AR) on Shifting Cultivation Areas

Justification

Artificial Regeneration (AR) will be applied to open or degraded areas mainly due to shifting cultivation since those areas do not have sufficient seeds or stumps for natural regeneration. Two types of AR will be applied: one is AR Mix and the other one is AR Bamboo. Depending on the field conditions including original vegetation before degradation and needs of local people, AR Mix or AR Bamboo will be selected by JFMC in consultation with Beat Office under supervision of RMU. The outline of AR Mix and AR Bamboo is shown in the table below.

Table: AR Mixed and AR Bamboo

Plantation Model	No. of saplings per hectare	Spacing	Pit Size	Maintenance period
AR Mix	1,100	3 m x 3 m	30 cm x 30 cm x 30 cm	5 years
AR Bamboo	625	4 m x 4 m	45 cm x 45 cm x 45 cm	3 years

Note: Maintenance period includes maintenance which is conducted in the same year (1st year) of the creation of plantation.

Responsibility

As described above, most of all AR plantations will be established in JFM project areas, so that JFMCs have key responsibility for planning, establishing, and managing AR plantations. Beat Officer, the secretary of JFMC will provide technical support as well as seedlings in case that JFMCs cannot prepare enough seedlings for their AR plantation at their decentralized people's nursery.

RMU will provide necessary guidance to Beat Officer, and if some problems happen, RMU gives advice to Beat Officer. If RMU cannot solve the problems, RMU will consult with Sub-DMU, and Sub-DMU, will give advice. Even if Sub-DMU cannot solve the problems, DMU will provide advice to solve them. AR - Mix

a) AR Mix

Objective

The main objective of AR with mixed species is to restore degraded forest land mainly due to shifting cultivation. This is also expected to contribute to improvement of livelihood of local communities and enrichment of biodiversity. In order to fulfil local people's needs, three types of plantations shall be applied under AR Mix. One is timber plantation, another is fuelwood plantation, and the other is NTFP plantation.

Methodology

As shown in the table above, 1,100 seedlings will be planted per hectare with spacing 3 m x 3 m as standard. Selection of tree species will be made by JFMCs during formulation of a micro plan in consultation with RMU. Main candidate species to be planted in each type of plantation are proposed from viewpoints of adaptability to harsh conditions and contribution to improvement of livelihood of JFMC members as shown in the table below.

Table: Main Species for Each Type of Plantation

Type of plantation	Main species
Timber plantation	Teak (<i>Tectona grandis</i>), Sal (<i>Shorea robusta</i>), Gamar (<i>Gmelina arborea</i>), Sisso (<i>Dalbergia sissoo</i>), Jarul (<i>Lagerstroemia speciosa</i>), Mahogani (<i>Swietenia macrophylla</i>)
Fuelwood plantation	<i>Ailanthus excelsa</i> , <i>Cassia nodosa</i> , <i>Cassia siamea</i> , <i>Lucaena leucocephala</i> , <i>Acacia auriculiformis</i> , <i>Melia azadirachta</i> , <i>Acacia mangium</i>
NTFP plantation	Jackfruit, Amlaki, Haritaki, Baheda, Rudrakh, Chalta, Dumur, Indian olive, Broom Grass, Wild Cardamom, Gandhaki

Steps

<Preparatory Work>

Step1: Select a site based on the following criteria: existence of severely degraded area, needs for timber or fuelwood or NTFP of JFMC members. Site selection will be conducted by JFMC in consultation with Beat Office under supervision of RMU.

Step 2: Survey the site using GPS instrument by Beat Officer, a secretary of JFMC with some JFMC members, and prepare the site including cutting of jungle and disposal of debris by JFMC members.

<Creation and Maintenance of 1st year>

Step 1: Digging of pits of 30 cm x 30 cm x 30 cm size up to 1,100 nos pits per hectare with 3 m x 3m spacing.

Step 2: Re-filling of pits after removal of foreign materials, breaking of clods and planting of stumps/ rhizome/ seedlings.

Step 3: Closure and fencing with bamboo to protect seedlings planted from livestock and human being.

Step 4: First weeding including base cleaning at a radius of 0.5 m and cutting weeds in between the lines.

Step 5: Check survey using GPS instrument.

Step 6: Vacancy planting under the subject to 15 % of mortality.

Step 7: Second weeding including base cleaning at a radius of 0.5 m and cutting weeds in between the lines.

Step 8: Earth mounding for bamboo species with scraping soil with spade ramming properly up to 1 m diameter in case of bamboo is planted in AR Mix.

Step 9: Making fire lines 4 m wide and diagonal inspection paths 1 m wide.

Step 10: Engagement of watch and wards.

Step 11: Monitoring the survival rate of seedlings planted and evaluation of conditions of the plantation.

<2nd year Maintenance>

Step 1: First weeding in the same way as the 1st year.

Step 2: Vacancy planting if necessary.

Step 3: Maintenance fencing if necessary.

Step 4: Second weeding in the same way as the 1st year.

Step 5: Winter cleaning including cleaning the base at a radius of 0.5 m and cutting weeds in between the lines including making fire lines and diagonal inspection paths and maintenance of them.

Step 6: Earth mounding for bamboo species in case bamboo is planted in AR Mix.

Step 7: Making fire lines 4 m wide and diagonal inspection paths 1 m wide.

Step 8: Engagement of watch and wards.

Step 9: Monitoring and evaluation.

<3rd year Maintenance>

Step 1: First weeding in the same way as the 1st year.

Step 2: Second weeding in the same way as the 1st year.

Step 3: Earth mounding for bamboo species in case bamboo is planted in AR Mix.

Step 4: Making fire lines and diagonal inspection paths and maintenance of them.

<4th year Maintenance>

Step 1: Weeding including cleaning the base at a radius of 0.5 m and cutting weeds in between the lines.

Step 2: Cultural operation including cutting climbers and cleaning weeds.

<5th year Maintenance>

Step 1: Cultural operation including cutting climbers and cleaning weeds.

The AR Mix plantation establishment and maintenance will be conducted three cycles.

b) AR Bamboo***Justification and Objective***

Bamboo is one of the major vegetation types in Tripura and very important from socio-economic and cultural point of view. Bamboo is also important for catchment protection since it is soil binding species. From these points of view, AR Bamboo shall be applied to rehabilitate degraded forest land.

Methodology

Bamboo species targeted for AR Bamboo are as follows: Muli (*Melocanna baccifera*), Mritinga (*Bambusa tulda*), Bari (*Bambusa polymorpha*), Lanthi bans (*Dendrocalamus strictus*), Dolu (*Schizostachyum dullooa*), Makal (*Bambusa pallida*), Paora (*Bambusa teres*), Barak (*Bambusa balcooa*), Kanak kaich (*Bambusa affinis*) which are primarily being used in value addition and creation of income generation activities in the state.

Bamboo species such as Mritinga, Bari, Barak, Dolu, Makal, and Paora will be cultivated through rhizomes collected from forest. A model of AR Bamboo plantation using these bamboo species is to plant 625 rhizomes per hector at 4 m x 4 m spacing. In case of Muli bamboo, direct sowing on the ground shall be conducted and other bamboo species will be cultivated by planting seedlings.

Steps

<Preparatory Work>

Step1: Select a site based on the following criteria: existence of severely degraded area, needs for bamboo, natural conditions suitable for bamboo. Site selection will be conducted by JFMC in consultation with Beat Office under supervision of RMU.

Step 2: Survey the site using GPS instrument by Beat Officer, a secretary of JFMC, with some JFMC members and prepare the site including cutting of jungle and disposal of debris by JFMC members.

<Creation and Maintenance of 1st year>

Step 1: Digging of pits of 30 cm x 30 cm x 30 cm size up to 625 nos pits per hector with 4 m x 4 m spacing.

Step 2: Re-filling of pits after removal of foreign materials, breaking of clods and planting of rhizome/seedlings/seeds.

Step 3: Check survey by using GPS instrument.

Step 4: First weeding including base cleaning at a radius of 0.5 m and cutting weeds in between the lines.

Step 5: Vacancy filling.

Step 6: Second weeding including base cleaning at a radius of 0.5 m and cutting weeds in between the lines.

Step 7: Making fire line 4 m wide and diagonal inspection path 1 m wide.

Step 8: Earth mounding with scraping soil with spade ramming properly up to 1 m diameter.

Step 9: Engagement of watch and wards.

Step 10: Monitoring and evaluation of conditions of the plantation.

<2nd year Maintenance>

Step 1: First weeding in the same way as the 1st year.

Step 2: Second weeding in the same way as the 1st year.

Step 3: Vacancy filling.

Step 4: Making fire line 4 m wide and diagonal inspection paths 1 m wide and maintenance them.

Step 5: Earth mounding with scraping soil with spade ramming properly up to 1.25 m diameter.

Step 6: Engagement of watch and wards.

Step 7: Monitoring and evaluation.

<3rd year Maintenance>

Step 1: First weeding in the same way as the 1st year.

Step 2: Second weeding in the same way as the 1st year.

Step 3: Making fire lines 4 m wide and diagonal inspection paths 1 m wide and maintenance them.

Step 4: Earth mounding with scraping with spade ramming properly up to 1.25 m diameter.

The AR Bamboo plantation establishment and maintenance will be conducted three cycles.

C1.2.2.2 Aided Natural Regeneration (ANR) on Lower Catchment

Justification and Objective

Aided Natural Regeneration (ANR) shall be mainly applied to lower catchment since rootstocks or mother trees are often available in lower catchment areas. The objective of this activity is to rehabilitate forest conditions by using existing natural vegetation and enrich forest products including NTFP for JFMC members.

Methodology

ANR will be conducted through following treatments such as singling coppice shoot, removal of climbers and shrub, selective weeding, fire protection by making fire lines, and gap plantings. Though the number of seedlings shall be decided depending on forest conditions, a model of ANR with 200 seedlings per hector is proposed here. Tree species for gap planting shall be decided by JFMCs to meet their needs in each site in consultation with Beat Office. Tree species with following characteristics are recommended for ANR in lower catchment areas: (i) good soil binder, (ii) fast growing, (iii) leaf litter with no adverse effect on soil, and (iv) multiple usage. For example, wild banana, Jarul (*Lagestromia speciose*), Fig (*Ficus carica*), *Eleocarpus* spp., *Pongamia pinnata*, and *Mangifera* spp. are recommended.

ANR shall also be conducted by using Muli bamboo which accounts for 80% of bamboo resources in the state. In case of ANR Bamboo, the steps of establishment and maintenance are basically the same as those for ANR Mix, but substitute sowing shall be done following gregarious or sporadic flowering.

Table: Summary of ANR Plantation Model

Plantation model	No. of samplings per hectare	Spacing	Pit size	Maintenance period
ANR	200	3 m x 3 m	30 cm x 30 cm x 30 cm	3 years

Note: Maintenance period includes maintenance which is conducted in the same year (1st year) of the creation of plantation.

Steps

<Preparatory Work>

Step1: Select a site based on the following criteria: availability of stumps or mother trees. Site selection will be conducted by JFMC in consultation with Beat Office under supervision of RMU.

Step 2: Decide tree species for gap planting based on needs of JFMC members, natural conditions, and availability of planting materials by JFMC in consultation with Beat Office.

Step 3: Survey the site using GPS instrument by Beat Officer, a secretary of JFMC, with some JFMC members, and prepare the site including cutting of jungle and disposal of debris etc. by JFMC members.

<Creation and Maintenance of 1st year>

Step 1: Digging of pits of 30 cm x 30 cm x 30 cm size up to 200 nos pits per hector with 3 m x 3m spacing for gap planting. Re-filling of pits after removal of foreign materials, breaking of clods and planting of stumps/rhizomes/seedlings.

Step 2: Check survey by using GPS instrument.

Step 3: Weeding including base cleaning at a radius of 0.5 m and cutting weeds in between the lines.

Step 4: Winter cleaning including cleaning of base at a radius of 0.5 m and cutting weeds in between the lines including making fire line and diagonal inspection path and maintenance them.

Step 5: Fencing with bamboo.

Step 6: Making fire line 4 m wide and diagonal inspection paths 1 m wide.

Step 7: Earth mounding for bamboo species with scraping of soil with spade ramming properly up to 1 m diameter in case bamboo is planted.

Step 8: Engagement of watch and wards.

Step 9: Monitoring and evaluation of conditions of the plantation.

<2nd year Maintenance>

Step 1: Weeding including in the same way as the 1st year.

Step 2: Maintenance fencing if necessary.

Step 3: Winter cleaning in the same way as the 1st year.

Step 4: Earth mounding for bamboo species with scraping of soil with spade ramming properly up to 1.25 m diameter in case bamboo is planted.

Step 5: Engagement of watch and wards.

Step 6: Monitoring and evaluation of conditions of the plantation.

<3rd year Maintenance>

Step 1: Weeding in the same way as the 1st year.

Step 2: Making fire lines and diagonal inspection paths and maintenance them.

Step 3: Winter cleaning in the same way as the 1st year.

Establishment and maintenance of ANR plantations will be conducted three cycles.

Responsibility

ANR will be mostly conducted in JFMC project areas, thus, JFMC has key responsibility for establishment and maintenance of ANR plantations in consultation with Beat office under supervision of RMU.

C1.2.2.3 Teak Plantation Management**Justification and Objective**

Teak fits the environmental conditions of Tripura and grows well, so that large area of teak plantations has been established in the state, especially central and northern part of Tripura. According to the working plans of Kanchanpur Forest Division (North District), Telimura Forest Division (Khowai District), Kailasahr Forest Division (Unakoti District) and Gumti Forest Division (Gumti District), there is 89,000 ha of Teak working circle and Teak Coppice with standard working circle in total including teak plantations established from 1999 to 2004 by JFMCs. Taking advantage of the existing abundant teak plantations, it is an appropriate strategy to manage a substantial part of the teak plantation through the system of coppice with standard for improving the quality of forest while providing small wood and fuelwood to JFMC members.

Methodology

In case of teak, coppicing shall be done every 20 years to 60 years. At the end of the year of coppicing, only two vigorously growth stems will be retained out of which one will be removed at the age of 10 years to produce small wood and fire wood. Besides, thinning will be conducted every 15 years. Small wood, fuelwood, and timber will be continuously produced through this system and these benefits shall be shared with JFMC members.

Not only coppicing but also gap planting are necessary in some teak plantations, especially at the fringe where forest conditions are degraded due to illegal logging. Gap planting with mixed species is recommended to avoid adverse impact of monoculture. The following tree species including leguminous trees are proposed for planting mixed with teak; Gamar (*Gmelina arborea*), Bamboo, *Terminalia bellerica*, *Diospyos* spp., *Acacia auriculiformis*, *Cassia fistula*, *Cassia siamea*. According to the experience of the cane arboretum at Anandanagar Research Station under Forestry Research Division, cane also will be candidate species for planting mixed with teak. Forest floor of the plantations shall also be enriched with leguminous herbs and shrubs to reduce soil erosion.

Table: Teak Plantation Model

Plantation Model	No. of saplings per hectare (gap planting)	Spacing	Pit Size	Management period
Teak Plantation Management	200	3 m x 3 m	30 cm x 30 cm x 30 cm	3 years

Steps

<Preparatory Work>

Step 1: Identifying teak plantations allotted to JFMCs by RMU and SDMU under supervision of DMU in consultation with JFMCs.

Step 2: Demarcating a specific site for management and decide tree species for gap planting based on needs of JFMC members and natural conditions by JFMC in consultation with Beat Office.

Step 3: Surveying the site using GPS instrument by Beat Officer, the secretary of JFMC, with some JFMC members, and identify specific areas for coppicing and gap planting.

<1st year Management>

Step 1: Coppicing of existing teak and preparing site for gap planting.

Step 2: Digging of pits of 30 cm x 30 cm x 30 cm size up to 200 nos pits per hectore with 3 m x 3m spacing for gap planting.

Step 3: Re-filling of pits after removal of foreign materials, breaking of clods and planting of seedlings.

Step 4: Weeding including base cleaning at a radius of 0.5 m and cutting weeds in between the lines.

Step 5: Winter cleaning including cleaning the base at a radius of 0.5 m and cutting weeds in between the lines.

Step 6: Making fire lines 4 m wide and diagonal inspection paths 1 m wide.

Step 7: Fencing.

Step 8: Earth mounding for bamboo species in case bamboo is planted in teak plantation.

Step 9: Engagement of watch and wards.

Step 10: Monitoring and evaluation of conditions of the plantation.

<2nd year Management>

Step 1: Weeding in the same way as the 1st year.

Step 2: Winter cleaning including cleaning of base at a radius of 0.5 m and cutting weeds in between the lines including making fire lines and diagonal inspection paths and maintenance of them.

Step 3: Earth mounding for bamboo species in case bamboo is planted in teak plantation.

Step 4: Maintenance of fencing.

Step 5: Engagement of watch and wards.

Step 6: Monitoring and evaluation of conditions of the plantation.

<3rd year Management>

Step 1: Weeding in the same way as the 1st year.

Step 2: Making fire line and diagonal inspection path and maintenance them.

Step 3: Winter cleaning.

Responsibility

Teak plantations will be allotted to JFMCs, thus, JFMCs have responsibility for management of teak plantation under supervision of Beat office and RMU.

C1.2.2.4 Silvi-Pastoral Plantation on Open Forests/Grasslands

Justification and Objective

Livestock rearing is an integral part of the rural economy although the productivity of the livestock is very low for which paucity of fodder or forage is one factor. Grazing is prohibited in Reserved Forests except for cattle owned by Forest villagers. But, in fact cattle are often grazed in the Reserved Forests because neither village pastures nor Protected Forests are able to sustain a large cattle population. Although it is said that tribal families do not much engaged in cattle rearing, grazing is regarded as one of causes of forest degradation by TFD and JFMC members.⁶ In addition, according to the results of the impact survey of TFIPAP, it is pointed out that the villagers encounter difficulty in arranging fodder due to increase in fodder price and enlargement of rubber plantations and plantations established by TFIPAP surrounding the villages that narrowed available lands for grazing⁷.

Under these circumstances, silvi-pastoral plantations shall be established in order to reduce pressure of grazing on forest areas.

Methodology

The original idea of silvi-pastoral plantation is an efficient and integrated land use management system in combination with tree species and livestock on the same unit of land which optimizes overall land productivity. However, taking into consideration the aforementioned situations in the state and the scope of the project, silvi-pastoral plantations should focus on fodder tree planting to avoid risk of attracting livestock in forest areas. Fodder harvested from silvi-pastoral plantation shall be fed to livestock kept in stall-feeding system.

Silvi-pastoral plantation focusing on fodder tree planting can be established in the similar way to establish AR Mix plantation though some tree species will be different. The summary of silvi-pastoral plantation is shown in the table below.

Table: Silvi-pastoral Plantation

Plantation Model	No. of saplings per hectare	Spacing	Pit Size	Maintenance period
Silvi-pastoral plantation	400	5m x 5 m	30 cm x 30 cm x 30 cm	4 years

Note: Maintenance period includes maintenance which is conducted in the same year (1st year) of the creation of plantation.

Even though the main objective of silvi-pastoral plantations is to provide fodder, not only fodder tree species such as *Leucaena leucocephala* and *Acacia auriculiformis* but also other multi-purpose tree species such as *Azadirachta indica* shall be planted to meet needs of JFMC members. The recommended tree species are shown in the table below.

Table: Species Recommended for Silvi-pastoral Plantation

Category	Species
Fodder tree species	<i>Acacia auriculiformis</i> , <i>Acacia nilotica</i> , <i>Sesbania spp.</i> , <i>Leucaena leucocephala</i>
Multipurpose tree species	Bamboo, <i>Azadirachta indica</i>
Edible trees	Jack fruit, Indian Carolce, <i>Toona ciliata</i>
Fruit bearing tree species	Bael (<i>Aegle marmelos</i>), Albizia, Terminalia, Ebminalia, <i>Embllica officinalis</i> , <i>Tamarindus indica</i> , Ficus
Other tree species	<i>Dalbergia sissoo</i> , Gliricidia, Artocarpus, Amalaki, Haritaki, Bahera, Arjan Agar, Chalta, Jam, Jarul, Mahogani, Chamal, Garjan, <i>Gmelina arborea</i> , <i>Albizia procera</i> , <i>Langestromia spp.</i>

⁶ Working plans for Kanchanpur and Gumti Forest Divisions.

⁷ Eptisa 2018. Impact of Tripura Forest Environmental Improvement and Poverty Alleviation Project (Phase-1) and Natural and Socioeconomic Condition Survey to support Preparatory Status on Tripura Sustainable Forest Management Project.

Steps

<Preparatory Work>

Step1: Select site based on the following criteria: needs for fodder, accessibility from villages. Site selection will be conducted by JFMC in consultation with Beat Office under supervision of RMU.

Step 2: Survey the site using GPS instrument by Beat Officer, a secretary of JFMC, with some JFMC members, and prepare the site including cutting of jungle disposal of debris etc. by other JFMC members.

<Creation and Maintenance of 1st year>

Step 1: Digging of pits of 30 cm x 30 cm x 30 cm size up to 400 nos pits per hectore with 5 m x 5 m spacing.

Step 2: Re-filling of pits after removal of foreign materials, breaking of clods and planting of seedlings.

Step 3: First weeding including base cleaning at a radius of 0.5 m and cutting weeds in between the lines.

Step 4: Vacancy filling.

Step 5: Second weeding including base cleaning at a radius of 0.5 m and cutting weeds in between the lines.

Step 6: Earth mounding for bamboo species in case bamboo is planted in silvi-pastoral plantations.

Step 7: Making fire line 4 m wide and diagonal inspection path 1 m wide.

Step 8: Closure and fencing with bamboo.

Step 9: Engagement of watch and wards.

Step 10: Monitoring and evaluation.

<2nd year Maintenance>

Step 1: First weeding in the same way as the 1st year.

Step 2: Maintenance of fencing.

Step 3: Second weeding in the same way as the 1st year.

Step 4: Earth mounding for bamboo species in case bamboo is planted in silvi-pastoral plantations.

Step 5: Making fire line 4 m wide and diagonal inspection path 1 m wide and maintenance them.

Step 6: Engagement of watch and wards.

Step 7: Monitoring and evaluation.

<3rd year Maintenance>

Step 1: First weeding in the same way as the 1st year.

Step 2: Second weeding in the same way as the 1st year.

Step 3: Making fire lines 4 m wide and diagonal inspection paths 1 m wide.

Step 4: Monitoring and evaluation.

<4th year Maintenance>

Step 1: First weeding in the same way as the 1st year.

Step 2: Second weeding in the same way as the 1st year.

Step 3: Making fire lines 4 m wide and diagonal inspection paths 1m wide.

Responsibility

JFMC has key responsibility for planning, establishing, and managing silvi-pastoral plantations in consultation with Beat Office under supervision of RMU.

C1.2.3 Eco development

Eco development is a series of activities, which follow key attributes of the Satoyama Initiative, entailing the pursuance of conservation of biodiversity, community participation, livelihood support and community empowerment. It was introduced in the late 1990s as an effort to reconcile the conservation needs in the Protected Areas with the livelihood concerns of the local communities, and to seek their involvement in support of the Protected Areas management. Eco development shall be undertaken within the project in Gumti sanctuary through the EDCs. The concept of eco development matches the vision of the globally respected Satoyama Initiative and represents a contribution to ‘realize societies in harmony with nature, comprising human communities where the maintenance and development of socio-economic activities including agriculture and forestry align with natural processes. By managing and using biological resources sustainably and thus properly maintaining biodiversity, humans will be able to enjoy a stable supply of various natural assets well into the future.’

C1.2.3.1 Identification of EDCs and Planning

Eco development is aimed to alleviate the livelihood constraints of the local communities which are circumscribed by the protective regime in the Protected Areas and to turn them into partners of the TFD in conservation. The Project shall undertake eco development in Gumti Sanctuary.

a) Identification of EDCs

Gumti has 19 JFMCs and 8 EDCs under the Wildlife Warden as per Annex 1, basically serving the purpose of the EDCs and many of these are within the Sanctuary. JFMCs that are selected for eco development shall be converted into an EDC. Selection of EDCs shall be done based on the following criteria in case of:

- Activeness level of activeness of the EDC (assessed by the record of cooperation with TFD staff on wildlife protection, condition of the outputs of past activities, frequency of meetings held, etc.)
- Dependency level of the community on the sanctuary
- Human-wildlife conflicts in the area
- Poverty level and the willingness of the community to engage with the TFD.

Table: EDCs and JFMCs under the Wildlife Warden, Gumti Sanctuary

Name of Range	Name of Beat	Sl. No.	Name of JFMC/EDC	Name of Village	No of Families
Gandachara	Jagabandhu Para	1	Dalirai Para	Jagabandhupara	42
		2	Balong humkarai		62
	Gandachara Proper	3	Laxmipur EDC	Laxmipur	50
		4	North Sarma	Gandachara	25
		5	Matima Chakma	Pancharatan	32

		6	Machkumbhir	Laxmipur	28
		7	Khakchang	Ultachara	36
	Dhalajari	8	Ramnagar EDC	Ramnagar	51
		9	Sangrangma EDC		48
	Ranipukur	10	Jarikusum	Sarma	49
		11	Ranipukur EDC	Pancharatan	50
	Ratannagar	12	NIL	NIL	0
	Hatimatha	13	Hatimatha	Dalapati	56
		14	Dalapati	Dalapati	75
	Bhagirath Para	15	Mohinya para	Bhagirath Para	70
		16	Dhanuram Para		54
		17	Naba Kumar Para		40
	Barabari	18	NIL	NIL	-
Raishyabari	Raishyabari Proper	19	Bowalkhali	Bowalkhali	110
	Tuichakma	20	Thakurchara	Thakurchara	54
		21	Chandidas Para	Tuichakma	104
	Raima	22	Indrakishore	Raima	60
		23	Khetradhan Roajapara		35
	Potachara	24	Purba Potachara	Purba Potachara	81
		25	Paschim Potachara	Paschim Potachara	88
Ganganagar	Ganganagar Proper	26	Ganganagar EDC	Ganganagar	56
		27	Naithok EDC		55
	Karmapara	28	Salpaha EDC	Karmapara	37
	Karnamoni Para	29	Sisathai EDC	Karnamoni Para	60
	Radharambari		NIL	NIL	0
	Chakma para		NIL	NIL	0
	Dangabari		NIL	NIL	0
8 EDCs and 19 JFMCs					

b) Micro Planning

EDC micro plan shall be prepared for the selected EDCs with the assistance of an LC/CO. This shall be a fully participatory process, reflecting the interests, priorities and concerns of the EDC members, within the given framework. EDCs shall be provided capacity building training in the early part of the project. A training program is developed as given in the following section. They shall also be trained in selected microenterprises operation and management.

C1.2.3.2 Eco development Activities

Entry point activities will be undertaken as a means to get the community involved in the process. The activities shall be decided in consultation with the respective EDCs, and based on their priorities, by the Wildlife Warden, within the provisioned fund of Rs 150,000 per EDC. Livelihood support activities are important to have the community cooperate with the conservation objective and at the same to help alleviate their deprivation. Small IGAs to be developed in each of the ten EDCs shall be activities that require small funding and not based on the forest resources. These may include: poultry, piggery, apiculture (outside the Protected Area), horticulture (outside the Protected Area), provision of drinking water and irrigation water, incense sticks making, marketing facility for agriculture produce, fishery in the local water bodies, provision of cooking fuel, broom making, ecotourism related works, etc. Income generating activities shall be undertaken through SHGs and each EDC can form a maximum of 3 SHGs. Under the Project, INR. 1 lakh per SHG shall be provided to EDC as a revolving fund. As the same the function of revolving fund is expected to be same as the one for JFMC, for further detail, see the section in Component 4.

Component 2. Soil and Moisture Conservation

To enhance quality of forest and its management in the target catchment areas/beats, the following activities for the soil moisture conservation will be conducted as the Component 2 of the project.

Table: Activities in Component 2. Soil and Moisture Conservation

Sec. No.	Activity	Site selection	Survey/design	Construction/ O&M
2.1	Construction of check dams			
	Model I and Model II	JFMC and TFD	TFD	JFMC
	Model III	JFMC and TFD	TFD under assistance of DPW	Construction by TFD Operation by JFMC Maintenance by TFD
2.2	Erosion Prevention Works combined with Check Dams			
	Brushwood check dam for gully plugging	TFD	JFMC	JFMC
	DeContour trench	TFD	JFMC	JFMC
	Mulching and plantation around SMC structure	TFD	JFMC	JFMC
2.3	Assessment of soil and moisture conservation model	TFD under assistance of TSAC	TFD under assistance of TSAC	TFD under assistance of TSAC

Respective activities in Component 2 are described hereunder:

C2.1 Construction of Check Dams

During TFIPAP, soil and moisture conservation works, which included construction of three (3) types of check dams along the valleys combined with soil erosion prevention works in hillside, were conducted to improve the livelihoods of the local communities, and to maintain the water regime and soil fertility of the area. The stored water of the check dam enhances the soil moisture conditions of vegetation, helps in ground water recharge capacity raising the water table in the area, and is used for irrigation and pisciculture. Availability of water ensures the increase of agricultural yield by multi-cropping and income generation through cultivated fish. In addition, soil and moisture conservation works mitigate soil erosion as sediment production. As the result, sediment discharge from the area decreases to the downstream area, and disaster risks related to the sediment in the downstream stretches are reduced.

Tripura has extremely erosive soil with intensive rainfall. Soil erosion is deemed as one of the most contributing factors of forest degradation and sediment disasters in the streams and rivers. Therefore, intensive countermeasures for the soil and moisture conservation are required in addition to the sustainable forest management activities in the project.

In the project, three (3) models of check dams will be built in the valleys related to the sustainable forest management activities in the target catchment areas/beats: earthen (two types) and concrete core embankment or reinforced concrete structures. Site condition, main purpose, and stakeholders of activities of respective check dams are summarized in the table below:

Table: Check Dams Applied in the Project

Type	Model 1: small earthen check dam	Model 2: short earthen check dam with clay core and submerged spillway	Model 3: concrete core or reinforced concrete check dam average 40 m with submerged spillway
Site condition	Upper part Terrain: narrow valley (just downstream site of gully) Slope: 10-20 % or > 20% Catchment less than 5 ha (less than 223 m square)	Middle part Terrain: narrow valley Slope: 10-20% Catchment less than 10 ha (less than 316 m square)	Lower part Terrain: wide valley Slope: gentle, less than 10% Catchment less than 20 ha (less than 447 m square), with water spread area around 2 ha
Main purpose	Water conservation and domestic water use	Water conservation, domestic water use and fishery	Water conservation, domestic water use, fishery and irrigation
Proposed	3 dams per 1 JFMC in	2 dams per 1 JFMC in	0.2 dam per 1 JFMC in

number of dams	average	average	average
Stakeholders of activities			
Site selection	RMU in consultation with JFMC	RMU in consultation with JFMC	RMU in consultation with JFMC
Survey/design	survey and design by RMU, cost estimate by JFMC under assistance of RMU	survey and design by RMU, cost estimate by JFMC under assistance of RMU	RMU under assistance of DMU, PMU, PMC and DPW
Construction	Construction by JFMC under supervision of RMU	Construction by JFMC under supervision of RMU	Construction by RMU
Operation	Operation and monitoring by JFMC under assistance of RMU	Operation and monitoring by JFMC under assistance of RMU	Operation by JFMC under monitoring of RMU
Maintenance	JFMC under technical assistance of RMU	JFMC under technical assistance of RMU	RMU under assistance of DMU, PMU, PMC and DPW

Earthen check dams of Model 1 and 2 which can be built and maintained by local farmers are the most cost-effective measures in the long run under Tripura conditions. The concrete core embankment or reinforced concrete check dams of Model 3 bear water pressure and soil pressure on the valleys and concrete structures require some degree of construction skills and larger investment. Therefore, construction and maintenance of Model 3 shall be done by TFD.

During TFIPAP, "Guidelines for Soil and Water Conservation Works, which include guidelines for check dams and other soil moisture conservation works, were prepared and applied to the soil moisture conservation works. However, the guidelines include few engineering aspects of the check dams, and it is difficult for officials of TFD to conduct planning, designing, constructing, operating and maintaining the structures thoroughly. Therefore, the guidelines shall be revised by PMU and PMC under assistance of PWD during the initial period of the project. During revision of the guidelines, the following matters shall be considered:

- As for check dams, "Manual on small earth dams" by Food and Agriculture Organization of the United Nations (FAO), 2010 will be a good reference for revision of the guidelines.
- The revised guidelines shall include standard drawings of the check dams and other structures to facilitate planning, designing and constructing for the officials of the field offices of TFD.
- There are few explanations of the hillside works in the present guidelines. The hillside works are inexpensive and effective measures of the soil moisture conservation. Therefore, the revised guidelines shall include the detailed explanation of the hillside works, based on the review results of those works in other state of India and other countries.

There are many remarkable bank erosion sites along the streams in the forest. The bank erosion is not only cause of the excessive sediment discharge, but also cause of loss of cropland for villagers' livelihood and risk of slope failure. The revised guidelines shall include inexpensive and effective measures against the stream bank erosion within the mandate of TFD, such as the foot protection of bandalling, slope and foot protection of sand bags or mortal gunny-bags, etc. Procedure of site selection, survey and design, construction, operation and maintenance of the check dams are as follows:

Site selection

Step 1: To screen small catchments (<5ha, <10ha and <20 ha) with points where are the streams related to the sustainable forest management activities in management area of objective JFMC with air/satellite photographs and GIS by RMU of the Project.

Step 2: To identify the potential sites by RMU of the Project, in consultation with representative members of the target JFMC, in consideration of the following matters:

- The water storage area of the check dam should be large as much as possible.

- The length of the check dam (the width of valley) should be short as much as possible.
- Soil material should be available in site.
- Site should be with appropriate accessibility from the villages of JFMC.
- Site should be appropriate for the proposed activities of JFMC.

Step 3: To confirm the potential sites and to finalise proposed check dam sites by the joint inspection of RMU and representative members of the target JFMC, in consideration of the numbers of respective check dams per a JFMC and the characteristics in the area of JFMC, such as total number of members, number of included villages, activities, management area, etc..

Survey and design

Topographic survey of the check dam sites of the target JFMC shall be conducted by RMU.

Design of the check dams of Model 1 and Model 2 shall be prepared by RMU in accordance with the revised guideline for the soil and water conservation. Base on the design by RMU, required cost shall be estimated by the JFMC under the assistance of RMU. DMU will approve the proposed design and amount sanctioned, and minutes of understandings shall be signed between JFMC and RMU.

In case of the check dam of Model 3, design and cost estimated shall be prepared by RMU in accordance with the revised guidelines, under assistance of DMU, PMU, PMC and PWD. DMU shall approve the detailed design and cost estimate.

Construction

Construction of the check dams of Model 1 and Model 2 shall be conducted by JFMC under the supervision of RMU, and Model 3 by RMU.

Firstly, check dams of Model 2 will be constructed after the plantation works of JFMC, in consideration of establishment of fishery by JFMC. Secondly, the check dams of Model 1 will be constructed, and finally Model 3.

During the project period, JFMCs will be established dividing JFMCs into 3 groups. Therefore, the construction works of the check dams will also divided into 3 groups.

Operation/monitoring

The check dams of Model 1 and Model 2 will be operated and monitored by JFMC under assistance of RMU. On the other hand, the check dams of Model 3 will be operated by JFMC under monitoring by RMU of the project.

Maintenance

Tripura has extremely erosive soil with intensive rainfall. Due to this condition, the earthen part of the check dams, especially downstream slope of embankment, will deteriorate. Therefore, periodical maintenance works are indispensable to maintain the function of the check dams. Required repair works of the periodical maintenance will be once in every two years with repair of embankment slope and its vegetation cover, especially downstream slope of the check dam, and removal of sediment in the pond. Design of the maintenance works of all models shall be prepared by RMU. The Periodical maintenance works for the check dams of Model 1 and Model 2 will be conducted by JFMC under the technical assistance of RMU and those of Model 3 by RMU of the target catchment/beat.

In addition to the periodical maintenance works of the check dams, repair of the vegetation cover of the embankment slope shall be conducted at any time.

C2.2 Erosion Prevention Works combined with Check Dams

Combined with construction of the check dams, the erosion sediment prevention works, consisting of brushwood check dam for gully plugging, development of contour trench and mulching and plantation around soil moisture conservation structure, will be installed. Site condition and stakeholders of the works are summarized in below table:

Table: Erosion Prevention Works Applied in the Project

Type	Brushwood Check-dam for Gully plugging	Development of contour trench	Mulching and plantation around soil moisture conservation structure
Site condition	Upstream part Remarkable deteriorated gully/small stream Slope: 10-20 % or > 20%	Steep hillside Slope: 10-20 % or > 20%	Hillside area around check dams
Proposed quantity in the Project*	3 brushwood check-dam per a JFMC in average	12 ha per a JFMC in average	2 ha per a JFMC in average
Stakeholders of activities			
Site selection	RMU in consultation with JFMC		
Survey/design	RMU, cost estimate by JFMC under assistance of RMU		
Construction	JFMC under supervision of RMU		
Operation	Monitoring by JFMC		
Maintenance	JFMC		

Note, *: Based on the actual average performance in the Phase 1.

Site selection, survey and design, construction, operation and maintenance are the same manners of those of the earthen check dams of Model 1 and Model 2. Details of respective works are explained hereunder:

Brushwood Check-dam for Gully plugging

Brushwood check dam for gully plugging is the combination of the timbered trees as a fence and is functioned as gully plugging when assembled like a box and situated in the gully. Soil and/or Stones and/or fallen tree leaves is/are put into the box as to arrest the sediment from flow downstream in the gully valley. The local bamboo trees can be used for lattice bars of the brushwood fences. How stiff the trees will be combined is the important point whether the brushwood is durable and sustainable in the long run. The connecting wire or rope is advisable to be bond on the junction of the lattice.

Brushwood check-dams shall be installed in the deteriorated valleys in the target area. Locations of the brushwood check-dams shall be determined in the sites by RMU in consultation with the members of JFMC.

The brushwood check dams are made of the natural material, and function of the brushwood check dam will deteriorate progressively. Therefore, maintenance works are indispensable. The maintenance works of the brushwood check-dams shall be once in every two years with site clearing and repair of brushwood check-dams by use of natural material around there.

Development of Contour Trench

Contour trench is the hillside works to arrest or retain the soil flow in the hillside, plantation and cropland. Staggered trench method with 1.0 m * 1.0m * 1.0m is used in Tripura state. Extent of the contour trench shall be determined by RMU in the site in consultation with the members of JFMC. In order to maintain function of the staggered trench, the maintenance works shall be conducted once 2 years with site clearing and excavation of retained soil of the trench. Materials and soil generated by the maintenance works shall be used to materials of mulching of trees.

Mulching and Plantation around SMC structure

Mulching is a certain kind of cover as to arrest or retain the soil around the plantation adopted in the gardening. Mulching and plantation around the soil moisture conservation structures will be conducted within the forest management activities. The cost of the works will be also included into the forest management activities. Maintenance of mulching and plantation will be done at any time.

C2.3 Assessment of Soil and Moisture Conservation Model

The environmental effect of the forest cover can be monitored in order to clarify effects of the soil moisture conservation including afforestation activities. The monitoring results will be used to establish a preliminary forest hydrological model in Tripura.

During the initial period of the project, PMU in consultation with the Forest Research Directorate of TFD and TSAC shall prepare the monitoring plan for assessment of soil moisture conservation in consideration of establishment of preliminary forest hydrological model in Tripura. Based on the prepared monitoring plan, RMUs shall conduct the observation in field during the project period. The monitoring results from the field shall be studied by PMU in consultation with the Forest Research Directorate of TFD and TSAC, and the preliminary forest hydrological model shall be established. Established model shall be used to formulate the future activities of TFD effectively.

Tentative monitoring plan will be as follows and required cost of the monitoring is included in the items related to the social and environmental consideration of the project:

Effect 1: Reduction of flood discharge

The runoff from forest area can be compared between before and after treatment. The runoff from the forest cover contributes to the slower runoff of surface water, which is the accumulation of the runoff flows from surface and groundwater discharged from catchment. The triangular notched weir and monitoring devices such as flow meters, rain gauges and, self-autonomous recording devices are needed for its purpose. The observation will start at the initial stage of the Project at a selected pilot site where soil moisture conservation measures including afforestation will be conducted in the Project. Observation will be conducted by RMU of the selected pilot site.

Effect 2: Raising water table in area

The soil moisture conservation including afforestation helps in ground water recharge capacity raising the water table in the area. Water table observation at the wells of the villages at the downstream sites of representative check dams will be conducted by RMU of the representative check dams.

Effect 3: Reduction of sediment discharge

The soil moisture conservation including afforestation helps reduction of sediment discharge from the catchment. Rainfall observation and SS of the flow will be monitored at just downstream sites of representative check dam by RMU of the representative check dams. In addition to monitoring of SS, BOD of flow will be monitored in consideration of the effect to fishery.

There are many scopes of convergence under this component which will be explored through project life. However, the essential convergence would be with MNREGA scheme to pull some financial resources for supporting labour costs and some small material costs. Additional Director & Senior Engineer SMC (of the Project) will facilitate/coordinate convergence work for this component.

Component 3. Livelihood Development

To enhance quality of forest and its management in the target catchment, the following activities shall be conducted under Component 3;

Table: Overview of NTFP based Livelihood

Sub comp. No.	Sub Component Name	Activities	Start Year	End Year	Tangible Output	Selection of site/Activity	Implementer/Facilitator	Implementation / O&M
C3.1	Objective							
C3.2	Community Organization for Livelihood Development							
C3.3	NTFP based Livelihoods							
C3.3.1	NTFP Products	Overview of NTFP Products under the Project	-	-	-	-	-	-
C3.3.2	Types of NTFP based Processing	Overview of three tier system for NTFP processing/value addition under the Project	-	-	-	-	-	-
C3.3.3	Support to NTFP based Livelihoods	Introduction	-	-	-	-	-	-
C3.3.3.1	Support for NTFP Centre of Excellence (NCE)	Registration as society, revenue generation, research, training, facilitation of livelihood, NTFP based business promotion, training and capacity building and business promotion for Mini-CCFCs and at T2 and T3 level	1	4	Publications, policy, revenue, successful enterprise, no of artisans developed/NTFP collectors groups formed and linked with Collection Centers	PMU/NCE	PMU/NCE	PMU
	NTFP Resource Assessment by NCE	NTFP resource availability & its status, sustainability, productivity, inventory and study report	1	2	NTFP resource analyzed, NTFP inventoried, Potential NTFP selected	PMU/NCE	Hired agency	PMU/NCE
C3.3.3.2	Formation of NTFP Collectors Groups: Tier 3	Formation of NTFP collector groups	2		No of members, revenue	PMU/RMU	JF/MC	
C3.3.3.3	Awareness Program on Sustainable Harvesting of NTFPs	Development of sustaining harvesting protocols/tools/methods of selected NTFPs	2	6	Knowledge, sustainable harvest, forest growth	NCE	RMU	RMU/JF/MC
C3.3.3.4	NTFP Collection/Primary Processing Centre: Tier 2	Construction/hiring of infrastructure, equipment, skill training, storage/collection, primary processing and sales of NTFPs produces, linkages with financial institution, linkages with T2 and T3, traders	3	4	Revenue with profit, self-sustainability	SDMU	NCE	RMU/JF/MC
C3.3.3.5	Diagnostic Studies	Financial and technical feasibility of collection centers, advance level processing unit, business plan, and study report with recommendation.	1	2	Technical, financial feasibility reflected DSR/DPR prepared linking T1, T2, T3 and market	NCE/Hired Agency	Hired Agency	PMU/NCE
C3.3.3.6	Advance Processing and Value Addition Unit (T1)	Construction of infrastructure, equipment, skill training, quality control, specialized value addition, linkages with traders, companies, financial institutions and marketing	4	6	Revenue with profit, self-sustainability	NCE	-	SDMU
	Support to Crafts & More		1	Continue	No. of products developed, expansion of market and annual turnover and profit, quantum of benefits provided, No. of beneficiaries benefited	PMU with support from NCE	NCE	NCE

Sub comp. No.	Sub Component Name	Activities	Start Year	End Year	Tangible Output	Selection of site/Activity	Implementer/Facilitator	Implementation / O&M
C3.1	Objective							
C3.2	Community Organization for Livelihood Development							
C3.3	NTFP based Livelihoods							
	NTFP Marketing through NCE	Developing promotion materials, advertisement, participation in festival and fairs	3	Continue	No of traders/companies, revenue trend	PMU/NCE	NCE/Hired Agency	NCE
C3.4	Agroforestry based Livelihoods							
		Formation of JLGs, collection and processing of agroforestry products, training, linkages with bank and with T1 and T2	5	Continue	No of beneficiaries, revenue/income, convergence, linkages with financial institution,	PMU/RMU	RMU/JLG	JLG
C3.5	Livestock and Fish Farming based Livelihoods							
		Formation of SHGs, strengthening, training, skill development , Business plan, marketing , linkages with financial institutions	2	5	No of beneficiaries, revenue/income, convergence, linkages with financial institution,	SDMU/RMU	RMU/SHG	SHG
C3.6	Ecotourism							
	Ecotourism Development	Selection of sites and activities, formation of community based ecotourism groups, training, funding support, PP model			No of beneficiaries, revenue/income, PPP	SDMU/PMU	PMU	PMU
C3.7	Revolving Fund for IGAs							
	Revolving Fund to JFMC/ EDC for Small IGA	Grading of SHGs, transfer of fund to JFMCs as grant, loan to SHGs form JFMC after approval of business plan, skill development, MoU	2	5	No of business, repayment, revolving trend, revenue to SHGs , convergence, linkages with financial institution,	SDMU	RMU	JFMC

C3.1 Objective

Component 3 “livelihood development” has the following objectives to reduce forest degradation by motivating them to judiciously manage forest resources and to reduce the pressure of forest degradation by unsustainable ways of resource utilization.

- Expand the opportunities of income generation for the betterment of life in Tripura.
- Divert forest-dependent living, jhum in particular, to other alternatives so as to reduce negative pressure on forest resources and vulnerability to soil erosion.

C3.2 Community Organizations for Livelihood Development

Two types of community organizations; SHG and JLG are formed in SCATFORM for livelihood development. IGA will be planned with feasibility analysis from technical, financial, social and economic and environmental point of views with support from LCs.

Table: Characteristics of group, commercial loan requirement and TSFSMP approach.

Items	Self Help Group (SHG)	Joint Liability Group (JLG)
Characteristics of group	Saving oriented grassroot organization	Credit oriented organization with joint liability
General characteristics of members in TSFSMP	Villagers who seek opportunity of income generation and financial support for daily spending	RoFR land holders (in case of Agroforestry development) Interested villagers in Primary processing work (Artisans)
Requirement for	No collateral required	No collateral required

lending from revolving fund/ commercial loan	Regular saving and operation of internal lending for 6 months by members Financial record keeping required Registration with saving fund	Personal credibility in the same village Joint liability among members No financial record required Registration to obtain loan is sufficient
TSFSMP approach	JFMC members IGA under JFMC Loan after 6month corpus fund collection from revolving fund of JFMC Technical assistance provided	JFMC members 1. Agroforestry development for ROFR land holders (demarcation provided) 2. IGA (non-agroforestry) with technical training (artisans) and equipment (financial support) marketing support

C3.2.1 Self Help Groups

SHGs shall be initially formed, then strengthened for about six months for institutional development, group management, saving under the operational rules and regulations. As per the protocol issued by Rural Development Department, as Tripura Rural Livelihood Mission (TRLM) is supposed to support SHGs created by any schemes or Departments, SHGs created under the Project would also be the said target under the condition of compliance with NRLM guideline and coordination at the Block Level Office. For such purpose, the Project shall review “Guideline for Mission Implementation” and may refer to it utilized by TRLM for the operation of SHGs created by the Project and take necessary steps to ensure smooth transfer of support of these SHGs to TRLM. Additionally, in order to be in a line of TRLM, the members of SHG would be mainly female.

Major objectives of SHGs

- i. Organize villagers who are interested in developing corpus fund and borrowing from it each other
- ii. Develop IGA activities together under JFMC orienting forest conservation financed by revolving fund of JFMC
- iii. Conduct organized production, value addition and marketing the products locally and elsewhere.
- iv. Avail loan/microfinance from nationalized/commercial banks and/or economic support from other schemes for their IGA.

Basic institutional structure

The femal SHGs shall be considered as priority with office bearers (President, a Secretary and a Treasurer) for the management and general members.

Rules and regulation and guidelines

Although basic ideas are shown below, it shall be considered to review and comply with guideline utilized by TRLM.

- (a.) Membership eligibility.
- (b.) Selection/election/expulsion/withdrawal of Office Bearers
- (c.) Roles and responsibilities of Office Bearers and general members
- (d.) Membership withdrawal and expulsion
- (e.) Operational/Functional Guidelines/rules (membership fee, SHG meeting, monthly contribution/saving by a member, internal credit/loan policy, loan availing eligibility/ loan repayment etc.)

IGA (T3 level) by SHGs

The SHG who performs well can avail finance for undertaking suitable IGA. IGA feasibility of the SHG will be assessed by the following the process:

- (a.) Rating of SHG based on criteria for selection of eligible SHG to undertake IGA
- (b.) Identification of natural/physical resources available in village and human capacity of group (knowledge, skill about the particular IGA)
- (c.) Potential of local/regional/domestic and marketing of the produce
- (d.) Feasibility analysis of the IGA from technical, social, economic, and environmental point of view
- (e.) Business plan development by SHG and approval by JFMC/RMU
- (f.) Release of microfinance/loan by JFMC after MoU is signed between SHG and JFMC
- (g.) Monitoring of IGA

C3.2.2 Joint Liability Group (JLGs)

JLG shall be formed by interested villagers who are willing to implement selected activity jointly with technical and other required support from the project. The activity shall be selected by JLG members with facilitation from project. In SCATFORM two types of activities are undertaken by JLGs: 1) agroforestry-based activities, 2) primary/simple processing by trained artisans.

A JLG will have a minimum of 6 members for primary/simple processing and 3 for agroforestry.

Major objectives of JLG

- (a.) Form a group of households who are interested in undertaking common activities for IGAs (primary/ simple processing) and land rehabilitation (agroforestry on RoFR land)
- (b.) Involve households in IGA and forest rehabilitation
- (c.) Seek fund support from nationalized banks/funding agencies/credit institutions for IGAs
- (d.) Promote organized production, value addition and marketing of products

Basic Institutional Structure

A JLG will have defined institutional structure (i) a Committee selected /elected among the members and (ii) General members. The Committee will comprise of Beat Officer as Member Secretary, Group Leader, Assistant Group Leader and Treasurer as Office Bearers with defined roles and responsibilities. For the initial two years Beat Officer provide managerial/administrative and other support and after that someone from JLG should become Secretary to ensure sustainability. RMU shall monitor the functioning of JLG regularly with assistance from Community Organizers.

Rules and regulation and guidelines

- (a.) Membership eligibility
- (b.) Selection / withdrawal of Office Bearers
- (c.) Roles and responsibilities of Office Bearers and general members
- (d.) Operational Guidelines of JLG (meeting, record keeping, auditing, processing for loan/grant from banks/financial institution/schemes and repayment etc., maintenance of infrastructure if any)

IGA(T2 level) by JLGs

Following process shall be undertaken for IGA for a JLG

- (a.) Selection of Interested members who are from a group and willing to work together for the formation of JLG

- (b.) Identification of suitable natural resource (RoFR land, water, NTFP) available in the village and available skill/knowledge among JLG members about the particular activity
- (c.) Identification and collaboration for convergence opportunity with line departments and institutions for technical, financial and capacity building support
- (d.) Study and exploration of potential of local/regional/domestic marketing potential of the produce.
- (e.) Feasibility analysis of the IGA from technical, social, economic, and environmental point of view
- (f.) Business plan development by JLG and approval by Committee/RMU
- (g.) Development of benefit sharing mechanism among members
- (h.) Establishing linkages with Crafts and More for technical, packaging and marketing support
- (i.) Linking with Larger Producer Organization (to be formed by group JLGs producing similar produce) for mechanized/improved value addition

C3.2.3 Training of SHGs/JLGs

In principle, three types of trainings are proposed for SHGs and JLGs. These trainings are included in Component 4.

Type I: Organizational Management and Accounting

The project will organize the following trainings for the SHGs/JLGs formed under the SCATFORM and also for those who were nurtured in TFIPAP based on need. The contents of training include: (a) Roles and responsibilities of Office Bearers, (b) Record keeping/data management, accounting, inventorization, etc. and (c) Communication, networking and conflict resolution.

Type II: Skill Development/ Technical Training

Implementation of the IGAs and agroforestry/nursery raising requires specialized technical competency for planning, production/processing, product management, value addition, hygiene maintenance and safety. Based on the selected activity and skill requirement, technical training and awareness programs shall be organized.

Type III: Marketing

Training on marketing technique and information sharing of the market available at local/regional other markets will be organized for products like poultry (chicken and eggs), fish, pigs, goats produced by SHGs as traditional IGA products. Additionally, training on marketing NTFP and agroforestry products shall also be organized. Such trainings shall be initially organized at SDMU level for the selected products which shows potentials of successful business. PMC shall assist PMU and RMU for planning, operationalization and organizing training programs

C3.3 NTFP based Livelihoods

There are two critically important factors for successful NTFP based livelihoods: 1) access to NTFP resources which motivate forest communities to manage them, and 2) feasible sales price of NTFP products with which forest communities can work for collection, primary processing, and storage. The Project shall well take into consideration of those points. Under the Project, on the basis of willingness and capacity of SHGs/artisans from JFMCs, availability of NTFP and marketing potential, their IGAs shall be supported within three tiers, which are categorized based on the requirement of skills and business management. Those SHGs/artisans would scale up to the next tier if they express their interest and obtain sufficient capacity to manage business. Ultimately, a cluster formed by those three tiers shall be aimed to be created under the Project, wherein four clusters would be created in total. For further detail, see C3.3.2.

C3.3.1 NTFP Products

In TFIPAP, broom grass (*Thysanolaema maxima*), 19 species of Bamboo, Large Cardamom (*Amomum aromaticum*), Broom Grass, Gandhaki (Sugandhmantri) (*Homalomenaaromatica*) were

planted for extracting oil for expected high economic return. There are other NTFPs like, Orchids, Honey, Agar, Mucuna, Aonla, and Baheda which have potential of commercial exploitation, plantation and propagation. Other prospective forest resources like flowers of Brassica, Litchi, Mango, Banana, Rubber leaf axil are found in plenty in Tripura are favourable for honey production. In the Project, as those species would be potential target for propagation/plantation, harvest, value addition in marketing⁸, it shall be well studied and analyzed with considering market demands.

C3.3.2 Types of NTFP based Processing

NTFP based livelihoods can be classified into three tiers based on willingness and capacity of SHGs/artisans from JFMCs, availability of NTFP and marketing potential: 1) Collection and primary processing as Tier 3 (T3), 2) Secondary processing for higher value addition as Tier 2 (T2), 3) Advanced processing and value addition as Tier 1 (T1). T3 is more traditional community-based rural activities while T2 requires technical equipment and marketing knowledge/connection and T1 requires specialized technical knowledge and niche market (specified client) by competitive business mode.

Table: Three types of NTFP based processing

Level	Type of NTFP based Processing	Organized unit by SCATFOR M	Typical Location/market	Management modality	Potential product	Risk and Return
Tier 3 (T3)	Collection and Primary Processing	SHG at JFM level	Local Market/ Easy access to collectors/	Simple operation by SHGs in JFMCs	Broom grass Bamboo Other NTFPs	Low risk low return
Tier 2 (T2)	Simple Processing with Management	Collection/Primary Processing Centre (CC)	Regional centre/ close to product market	Business operation by members (Production cooperative)	Broom grass Bamboo processing Basket Handloom* Terrakota* Agarbatti*	Medium risk and medium return
Tier 1 (T1)	Advanced Processing for Value Addition	Advanced Value Addition Unit (AVAU)	Decided by Feasibility /Centrally located possible/ Niche market	Specialized management (Production cooperative/ company)	Large cardamom Gandhaki oil Rubber Honey Bamboo Medicinal plant	High risk high return

*These products are not NTFP-based but can be supported to generate jobs in Forest community based on the experience of TFIPAP

NTFP collectors shall be mobilized and form SHGs in a JFMC at T3 level for undertaking NTFP collection and its marketing based on Micro Plan.

Collection/Primary Processing Centres (CC), which would hold storage, shall be established at local weekly market/convenient location at T2 level. CC shall be easily accessible and communicable by SHGs/JFMCs. It is envisaged that SHGs of nearby JFMCs shall bring NTFPs for disposal at CC. The CC shall also operate as primary processing centres. Products produced by SHGs/JFMCs/JLGs other than NTFPs shall also dispose the produce at CCs. Based on the type of products and commercial potential, primary processing, product development and marketing shall be undertaken by the Centres

Advance level processing and value addition enterprise of selected products shall be established at T1 level under Sub Division level for the production of specialized products, wherein collectors, artisans, etc at T2 and T3 shall belong to and work together based on necessity. This is how a cluster can be formed under the Project. Specific product-based unit shall be established at a location considering resource availability (NTFPs, agroforestry products, bamboo etc.), road/transport, other logistics required for a successful unit/enterprise based on the diagnostic study.

⁸ See Successful example of SHGs producing honey with financial and technical support by Khadi and Village Industries Board in Tripura.

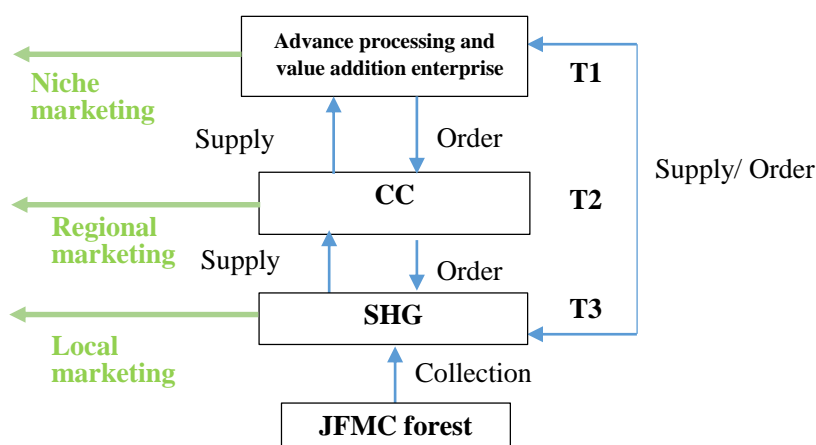
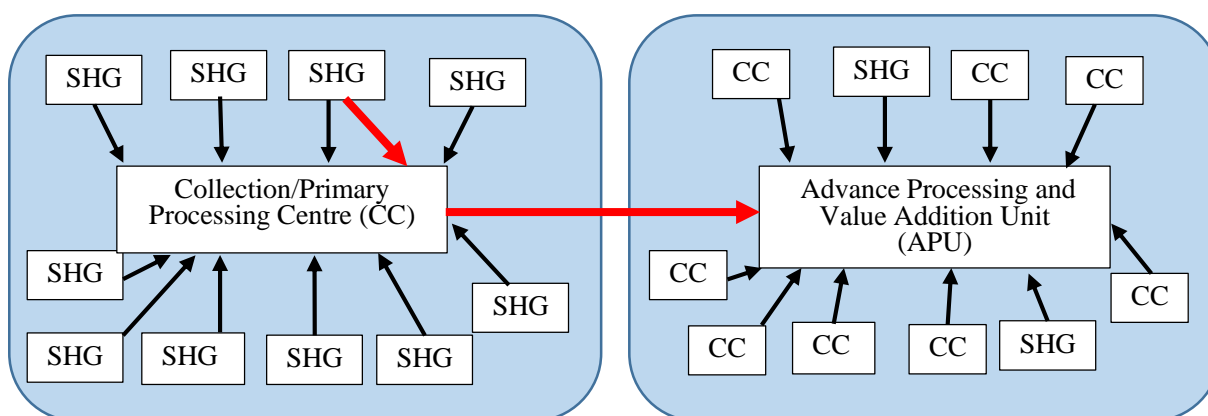


Image of Tier levels and SHG, Simple Processing Unit and Advanced Processing Unit



Product Flow between SHG, CC and APU

C3.3.3 Support to NTFP based Livelihoods

C3.3.3.1 Support for NTFP Centre of Excellence

The Project shall support newly established as an autonomous society, NTFP Centre of Excellence (NCE), in order to make NTFP more profitable for forest communities.

a) Main activities done by NCE under the Project

The following activities shall be supported by the Project. For detail, see Vision Plan in Annex 2.

Table: Project Activities by NCE

Research on NTFP/Medicinal Plants and High Value Timber Species & Production
<ul style="list-style-type: none"> • Impact assessment and evaluation of different types of plantation (e.g. cane etc.)* • Study on economic contribution of NTFPs to village economy, forest governance, forest/NTFP certification* • Research on medicinal plants and NTFPs, its growth, productivity inventory, and availability* • Study on high value timber species plantation (agar, rose wood plantation, mahogany etc.) * • Market survey/discover fair price of NTFPs for collectors from forest community*
Value Addition & Marketing

<ul style="list-style-type: none"> Facilitation of NTFP based livelihood activities through formation of NTFP collectors SHGs at JFMC level, establishment of NTFP collection/storage and primary Centers at convenient locations and establishment of High Value Processing Units for producing specialized products* Facilitation of value addition, and marketing of NTFPs/handloom/handicrafts products produced by Mini-CCFCs through Crafts and More ** Organize buyers and seller meets and promotion of exports of NTFP products- registration of NTFP based units/enterprise with NCE, participation in national and international market/fair Monitoring of NTFP harvest, collection, processing, value addition, marketing and allied activities in the project areas
Training and Extension
<ul style="list-style-type: none"> Promotion of ex-situ and in-situ conservation* Development of sustainable harvesting protocols for selected NTFPs, developing models for benefit sharing mechanism etc. and its extension Transfer of technology to high tech nursery after third year onwards in case of bamboo* Development of training materials (English, Bengali) for different stakeholders, editing, printing Conduct training (both educational and departmental training) for different stakeholders (community, different level of State Forest Officers)**
Supporting Activities/Allied Activities
<ul style="list-style-type: none"> Revision, finalization, approval and gazette notification of NTFP policy of state through local, regional and national level consultation meetings and workshops. Holding national workshops on issues related to NTFPs conservation, forest governance, NTFPs based livelihoods and presentation of NCE contribution in those areas Exchange visits from and to different institutions for cross learning Publication of research papers, Newsletter, books, brochures, forest management interventions experiences, report of experiences of experimentation/impact, sustainable harvesting protocols brochures, newsletters, proceedings etc.
Institutional Support/Arrangement for NCE & Crafts and More
<ul style="list-style-type: none"> Marketing Operation

Remark: *Need based contractual staff

**Funded by PMU.

b) NTFP Resource Assessment by NCE

NTFP Resource Assessment will be carried out by PMU/NCE with support from DMU, SDMU, RMU and LC/CO/FF in order to grasp the status of existing NTFP resource in the State and lay down the basis of T2 and T3. The assessment shall be composed of two steps of work; 1) Preliminary Assessment Survey, and 2) NTFP Resource Assessment.

In Preliminary Assessment Survey, while the survey per se shall be conducted by PMU/NCE and Working Plan Division of TFD, data/information on NTFP availability and harvest, market dealing with NTFP, etc of all Beats including non-project target Beats shall be collected by all Range Office with support from DMU/SDMU and LC/CO/FF and compiled by NCE. Throughout the said work, it is expected to depict entire picture of NTFP resource in the State and bring effective thoughtful analysis of positioning of project target Beats.

Based on the Preliminary Assessment Survey, which depicts broad picture of NTFP resource of the State, NTFP Resources Assessment shall be conducted by organization/agency with main facilitation by PMU/NCE in consultation with PMC with focusing on analysis of NTFP resource in project target

Beat. The assessment would identify NTFP resource as well as its potential area under the Project and would lay down the basis of establishment of T2 and T3. For such purpose, officers and project staff shall be well trained and understand the concept and necessity of this intervention. The indicative outline of NTFP Resource Assessment is as per below;

◆ **Objectives**

- i. To assess current inventory of important NTFPs in the different forests
- ii. To carry out availability assessment, current uses and its impact on forest and people
- iii. To conduct zone wise mapping of potential NTFP and arrive at Importance value Index for each enlisted species
- iv. To device detail package of set of practices for the selected most exploited forest based species for in situ and ex situ conservation
- v. To recommend strict protocols for sustainable harvesting for Rare, Endangered and Threatened (RET) plant species and suggest its conservation plan
- vi. To prepare a list of NTFP which can be extracted from forests for livelihood generation
- vii. To specify potential zone of particular NTFP to be extracted/collected.
- viii. To prepare a prioritized list of potential NTFP on which processing and value addition can be planned

◆ **Proposed methodology**

Task 1: Situation Analysis:

- Sites shall be selected with discussion with PMU/TFD and SDMU. Secondary information shall also be considered. Selected sites shall represent all forest types where JFMC are constituted/functioning.
- Resource assessment will be undertaken through PRA and field survey in each JFMC sites and primary data on distribution and availability of NTFP species will be collected. Inventory of the available NTFP of all JFMC sites will be made through systematic survey with suitable ecological statistical methods. Thus the outcome will be the Master list of available NTFP.
- For NTFP resource assessment sufficient sample plots will be laid in each forest division or district. Location of sample plots will be supported with GPS coordinates and availability and extent of NTFPs in each selected area will be assessed. Region wise information on different categories of NTFPs (edible/medicinal/aromatic/spices, dye/gums & resins/bamboo/canes etc.), use of tools, and income from NTFP/NTFP collected/harvested etc.
- The plot wise density of all the plant species of NTFP importance will be recorded including assessment of seedling density which would give idea of the species regeneration capacity.
- Average density of tree, herbs and shrubs species and Importance Value Index (IVI) will be calculated.

Task 2: Participatory mapping on Prioritization of species Mapping of NTFP rich zone in each division/district

Task 3: Evolving package of practice on in situ and ex situ conservation

Task 4: Field guidance for dissemination for information

Special emphasis will be laid on the potential NTFPs having commercial value and scope for livelihood creation. The project will also consider 12 species for which market study including demand analysis has already been done about a decade ago.

◆ **Possible outcome**

- Regions with high potential of specific NTFP for developing Sustainable NTFP extraction Plan

- Training of JFMC members on sustainable harvest of NTFP species
- Conservation plan for each NTFP species prepared and implemented
- NTFP based potential industries planned and NTFP based livelihood plan strengthened
- ◆ **Form of survey**

NCE organizes the assessment through engaging organizations. Indicative list is as per below.

- i. Indian Institute of Forest Management , Bhopal, Madhya Pradesh
- ii. Trans-Disciplinary Health Science & Technology (TDU), Bangalore,
- iii. Tropical Forest Research Institute, Jabalpur, Madhya Pradesh
- iv. Tata Energy Research Institute, New Delhi, any other institution

◆ **Survey Team composition**

1. Team Leader and Forest Management Expert 1, having minimum of Ph. D, in forest management/ related field with proven 15 years of research/ assessment/ quantification/ productivity analysis of forest/ NTFPs resources, and experience as Team Leader/ Deputy Team Leader/ Team Lead.
2. NTFP Expert 1, having minimum of M. Sc. in Forestry/ Post Graduate Diploma in Forest Management with 10 years of experience of conducting research /study of similar nature.
3. Forest Productivity and Inventory Expert 1, having minimum of M. Sc. in Forestry/ Post Graduate Diploma in Forest Management with 10 years of experience of conducting research /study of similar nature.
4. Field Surveyor 2, having experience of working in forest survey/assessment with in Forestry/Botany/ Post Graduate Diploma in Forest Management/ Natural Sciences with 2 years' experience

c) **Viability Study for Mini-CCFCs**

NCE/PMU shall conduct a Viability Study for Mini-CCFCs in all project area under TFIPAP to see the current working status, needs, potentiality of developing them, scaling up of production, etc along with the performance of Crafts & More's outlets. The framework of the Study shall be prepared by PMU immediately after initiation of the Project. On the site, DMU/SDMU/RMU and LC/CO/FF shall be involved in the process. Once the data/information is collected, it shall be analysed by NCE for reviving Mini-CCFCs. Based on the outcome of the Study, Mini-CCFCs shall be supported by the Project.

C3.3.3.2 Formation of NTFP Collector Groups: Tier 3 (JFM Mode)

On the basis of analysis of NTFP Resource Assessment, JFMCs located in commercially important NTFPs producing areas shall be grouped based on Micro Plan. In the process of microplanning TFIPAP's/or new JFMCs will be encouraged to form SHGs comprised of NTFP Collectors Group in order for them to be able to make collective decision for collection, trade and related activities and ensure fair market price. SHGs for NTFPs collection shall not be formed in those JFMCs which has degraded forest and where unsustainable harvesting practices are prevalent. Groups in such JFMCs can be formed only after improvement in forest condition and introduction of sustainable harvesting practices. There will be one SHG per JFMC with a minimum of 5 and maximum of 30 for the purpose of NTFP based activities. If there is large number of NTFPs collectors' more than one group can be formed. Following trainings shall also be carried out by PMU. Each of the JFMC having SHGs of NTFP Collectors Groups shall be explained about objectives and goal of intervention and benefit derived out of it.

Table: Training on Sustainable Harvest, Storage and Grading of NTFP Products

S.No.	Topic	Content	Duration	Place	Participant	Trainer / organiser	Timing
1	Institutional	Organizing collector group	2 days	RMU	JFMC	RMU with	Implementa

	Development			level	members	support from COs/LCs/FFs	tion Phase 2 training /year for 3 years
2	Sustainable Harvesting, Storage and Grading	Sustainable harvest practice of NTFP species, storage method and grading for marketing	2 days	RMU level	JFMC members	COs/LCs/FFs under the supervision of Range Officer	Implementation Phase 2 training /year for 3 years

Project Support

The SHGs shall function at grass root level institution at T3 for the collection of NTFPs and its marketing. The entire process shall be facilitated by RMU with support from FF as well as COs/LCs. SHGs shall prepare micro business plan with the simple format prepared by PMU. The said plan shall be screened by RMU with the help of LC and COs. Based on the micro business plan, credit for raw materials shall be provided by CCs/Mini-CCFC at T2. For their operation, necessary cost shall be borne by revolving fund. For further detail of revolving fund, see the section below in Component 4.

C3.3.3.3 Awareness Program on Sustainable Harvesting of NTFPs (Department Mode)

The Project shall disseminate sustainable harvesting practices among gatherers and enhance forest productivity over a period of time.

Following activities are to be undertaken:

5. Develop simple protocols/methods and prepare technical manual on sustainable harvesting techniques of NTFPs in local language and pictorial and organize village level or groups of village level awareness workshops on the same.
6. Prepare a pictorial and textual informative leaflet for generating awareness among the gatherers.
7. Organize periodical field level training at village/group of village level combined with demonstration in the forest during the season. The RMU will organize with assistance from contractual field staff and resource persons from the forest department/ICFRE centre/State Medicinal Plant Board
8. Regularly monitor the impact of awareness on the forest patches involving JFMCs and gatherers. RMU shall monitor with assistance from COs and FFs
9. Organise JFMC level awareness creation programs in villages itself. RMU shall organize with assistance from COs and FFs.

Table: Training for Awareness Programme on NTFP Sustainable Harvest

SN	Topic	Content	Duration	Place	Participant	Trainer / organiser	Timing
1	Field level training on sustainable harvest of NTFP	Sustainable harvest techniques of NTFP	1 day	RMU level	NTFP collectors JFMC groups	LC/CO/FF PMU/PMC	Before the harvest season
2	Awareness creation programs on sustainable harvest NTFP	Sensitizing importance of forest and general environment, socio-economic development, appropriate technique and tools for sustainable harvesting, etc.	1 day	RMU level	JFMC members	FFs under the supervision of LC/CO	Annually year 1-3

C3.3.3.4 NTFP Collection/Primary Processing Centre (CC): Tier 2 (Department Mode)

Based on the analysis of the NTFP Resource Assessment, CC formation shall be promoted by RMU with support from LC/CO/FF and PMC for enhancement of NTFP products, processing mechanism and marketing capacity. In the process of micro planning, willingness of creation of CC, availability

of resources, sustainability of CC shall be well discussed amongst JFMC members. Final decision of CC establishment shall be made by NCE in consultation with RMU based on the application from JFMCs. It is estimated that 10 SHGs create one CC and 45 numbers of CCs will be established in total. The location of CC shall be in a local market place within the reach and proximity by the groups of SHGs. Each group which is comprised of 10 SHG/JFMCs shall decide the location either on rented premises/space or constructed by the Project on a land free from litigation in consultation with RMU/SDMU with the support of LCs.

Management of Collection/Primary Processing Centre

The CC will be managed and monitored by RMU and JFMC. The product will be sold through Craft & More and other market channels. Collection/Primary Processing Centre Coordinator (CCC) shall be appointed by JFMC to manage day to day operations including record keeping, bank operation, and purchase and sell inventory with the support of L/C, CO and FF. Training for CCC shall be arranged by NCE. S/he shall be paid a commission, which shall be decided by NCE in consultation with JFMC and covered by the working capital for three years. After three years, s/he shall be paid by JFMC.

Modality for establishment of Management Committee of Collection/Primary Processing Centre including detailed structure, functions, rules, regulation, documentation process and monitoring mechanism etc. shall be considered and decided by PMU with consultation of JFMC and PMC.

RMU shall monitor the operation of CC and submit monthly report, which shall be uploaded to MIS, to NCE through SDMU.

Members of Collection/Primary Processing Centre

CC shall have following members; a) Head of RMU Range Officer as a Chairman, b) Representatives of JFMCs from Forest Beats (one representative from one Forest Beat) as member from concerned CC, c) Beat Officer of concerned CC, and d) CCC as an invited member.

Head of RMU will automatically become the Chairman as a head of RMU. A member can be replaced any time if he/she is unable to perform duties/responsibilities or forgo membership voluntarily and willingly or found guilty in a court of law. The tenure will be for a period of two years. Detail structure, functions, rules, regulation, documentation process and monitoring mechanism etc. shall be developed by PMC.

Project Support

Under the Project, each CC shall form a business plan for their activities with the support of LC/CO and approved by SDMU. Based on the business plan, procurement of equipment as well as working capital including the cost for raw material, which would be obtained locally preferably source from JFMCs, maintenance cost for CC and other concerned operation cost. The exact amount shall be decided based on a business plan by PMU/NCE. While the cost for procurement of equipment shall be transferred by NCE, working capital shall be transferred by NCE/Advance Processing and Value Addition Unit (APU) as the case may be.

Managerial and Technical Training

While primary processing shall be undertaken at CCs, advance processing shall be taken place at centrally located APU after its establishment. Specific products require specific technical skills and knowhow for storage, processing/ value addition/ packaging, operation and maintenance of machineries/ equipment/ tools. Selected artisans/persons among JFMCs shall be trained for processing. For provision of such managerial training and product specific technical training, PMU shall hire specialized agencies.

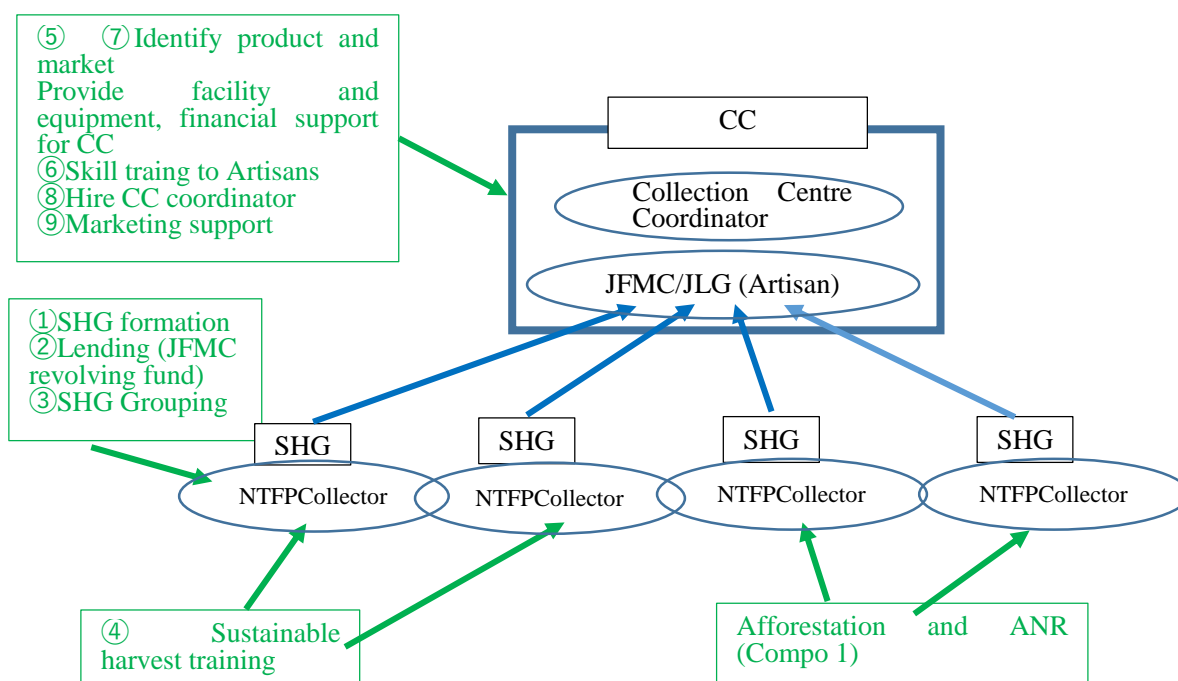


Figure: Institutional structure of SHG and CC (Project Support in Green box)

Procedure of Project activities at T2 level

PMU level (preparation)

- Conduct Resource assessment and diagnostic study to identify potential NTFP and features of CC by PMU
- Identify JFMCs to form CC for the identified NTFP by PMU/SDMU/RMU
- Develop business plan (market place, premises/space for establishing CC, arrange necessary infrastructure such as machineries/tools/safety measures, quality control system, working conditions, storage etc in consultation of grouped JFMCs) for the identified CC by SDMU

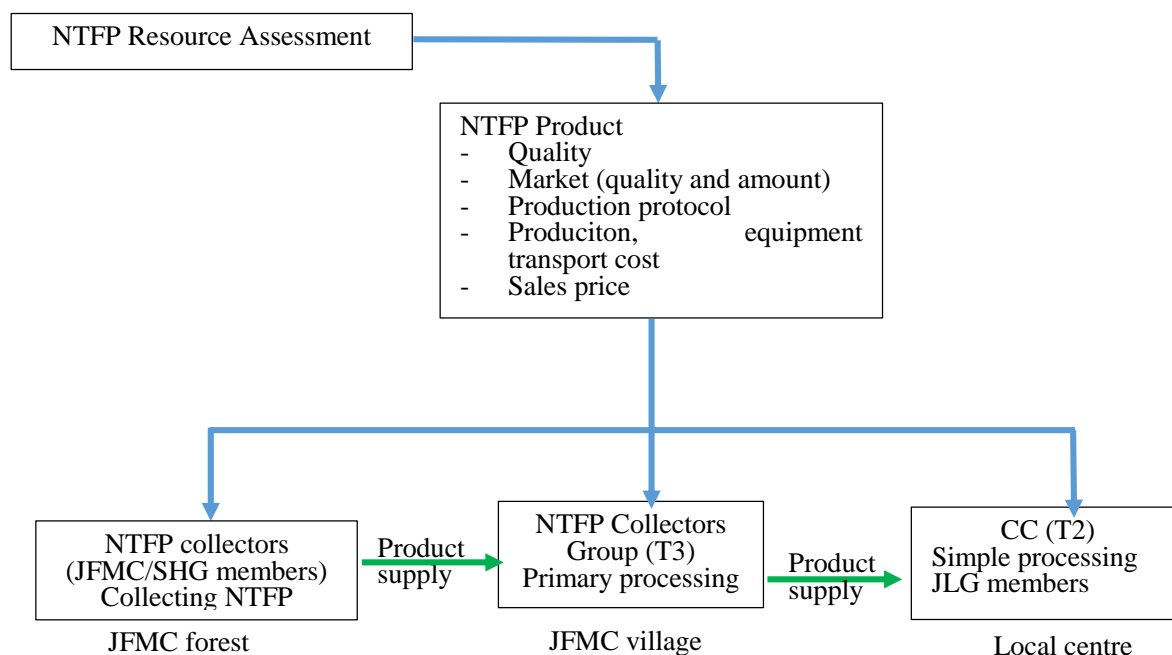
JFMC level

- Mobilize NTFP collectors and form of SHGs at JFMC level by SDMU/RMU
- Organize awareness and institution development on grouping SHG for NTFP by SDMU/RMU
- Conduct trainings on sustainable harvesting for the selected NTFPs by SDMU/RMU

CC level

- Conduct skill development training for processing/maintenance of infrastructure, operationalization and management of CC
- Provide financial support for establishing CC by SDMU/RMU
- Appoint CCC for management for initial three years by SDMU/RMU
- Facilitate product marketing by NCE/PMU

Organizational structure and Project support (green letters) for CC and NTFP Collectors Group



Relation between Resource Assessment and NTFP Collectors/SHG/ Collection/Primary Processing Centre

Support to Mini Community Common Facilitation Centres (CCFCs) established in TFIPAP

TFIPAP had established 53 Mini-CCFCs at JFMC level for creating livelihoods (24 CCFCs broom grass, 14 bamboo-based furniture/utility items/basketry/ornaments including one treatment plant, 10 handloom (including one training centre), 3 agarbatti/incense stick and remaining are embroidery and terracotta etc.).

Forming JLGs, training artisans, provision of facility and equipment, and marketing of products were provided to create member's livelihoods. In addition, some Mini-CCFCs may function as initial CC though they have been established at JFMC level which uses materials from SHGs in neighbouring JFMCs.

However, current condition and capacity of these Mini-CCFCs are not same; thus they require different types of support. Therefore, NCE/PMU shall conduct viability study for assesement of the current situation and needs of these Mini-CCFCs as well as the environment surrounding them in order to reviaive them and link with the CC by PMU/NCE as wll as Market Promotion Officer of Crafts & More. The said study shall be a part the NTFP Resource Assessment.

The Project shall continue supporting Mini-CCFCs for updating skills, resource mobilization, value addition and marketing through Crafts and More by arranging Working Capital with co-financing by the State Share with the maximum rate of INR. 4 lakh (INR. 3 lakh by the Project and INR. 1 lakh by the State Share). The exact amount of Working Capiral for the operation of Mini-CCFC shall be decided based on a business plan with the approval of NCE.

C3.3.3.5 Diagnostic Studies for Advance Processing and Value Addition Unit for Cluster Development

Cluster Development

Based on performance of NTFP Collectors Group and CC/Mini-CCFC, willingness of those members, NTFP resources available, marketc accessibility, etc, creation of a unit with the function of further advanced processing and value addition than CC, which is categorized as tier 1, shall be considered.

Additionally, it shall be positioned to coordinate amongst stakeholders at T2 and T3 and manage the entire value chain in case of its establishment. Under the Project, such structure formed by three tiers shall be developed as a cluster. Within a cluster, T1 would obtain raw materials or primary processed materials from NTFP Collectors Groups or CC/Mini-CCFC. Namely, NTFP Collectors Groups or CCs/Mini-CCFCs would bring their collected/processed materials to APU positioned in tier 1 and SDMU level for value addition. For further detail of a cluster, see following section.

Diagnostic Study on establishing Advance Processing and Value Addition Unit

A Diagnostic Study for establishing APU shall cover NTFP resource potential and options available for complimentary activities, infrastructure and institutional requirement, skill gap, credit requirement, technology required, market potential as well as future sustainability assessment. Additionally, it shall propose main finish product, complimentary products, risk and risk mitigation, financial focus, working capital requirement and sales focused. In other words, diagnostic study shall provide the roadmap of cluster development process and business plan. Based on the result of the study, PMU shall support infrastructure development, machinery, accessory and equipment, skill development, staffing and marketing, running /maintenance cost etc. until APU becomes self-sufficient within 5 years. It is assumed that APU shall start profit making after period of 3 years and become self-sufficient after 5 years period.

The Study shall be undertaken by the organizations who are experienced in conducting cluster-based microenterprise development from technical, economic (cost and benefit analysis), marketing and do the aspects required to run a successful business. NCE shall engage and enter into contract with the hired agency. For this PMU through NCE shall advertise for a short-term consultancy or alternatively Entrepreneurship Development Institute of India, Gandhinagar, Ahmedabad, Gujarat/ Yes Bank/Nationalized Bank can be offered directly for a period of one year. The study would be considered to be conducted batch-wise as the development progress of T2 and T3, which would be initiated after microplanning, would differ from JFMC to JFMC.

The study shall cover the following aspects. NCE will prepare detail TOR for hiring consultants and utilizing their services with support from PMC.

◆ *Broad Contents of study*

- Feasibility of location, proximity, logistics and techniques of SHGs, CCs, APUs and its viability
- Linkages with SHGs formed at T3 in JFMCs, CC at T2 at local market place and proposed advanced NTFP based enterprises at T1
- Financial investment and projected profit
- Plan for initial 5 years and future strategies and actions
- Existing market (local, state, regional, domestic with some reference to international)
- Quality product development market expansion strategies
- Collaboration with other institution for financing and other requirement
- Current resource availability/raw material availability status, availability in future for running microenterprise
- Human resources, technology, technical expertise required for processing, storage and marketing.
- Operational feasibility
- Business planning based on local resources, expertise, market potential etc.
- Ways and means to minimize risk as part of business planning.

◆ *Indicative qualification and domain of expertise and staffing for study*

1. Team Leader and Enterprise Development/Cluster Development Expert 1, having minimum of Master Degree with proven 15 years of experience in relevant study as Team Leader/Deputy Team Leader/Team Lead

2. Feasibility Study Expert 1, having minimum of Master/Post Graduate Degree or Diploma in Management/Enterprise Development or related field with 10 years of experience of similar nature
3. Feasibility Study Assessor 2, having 2 years of work experience in enterprise/microenterprise establishment/assessment with Master Degree.

C3.3.3.6 Advanced Processing and Value Addition Unit (APU): Tier 1

Based on a Diagnostic Study, formation of APU, which would be microenterprise, shall be considered for the purpose of cluster development. The structure of a cluster is shown below.

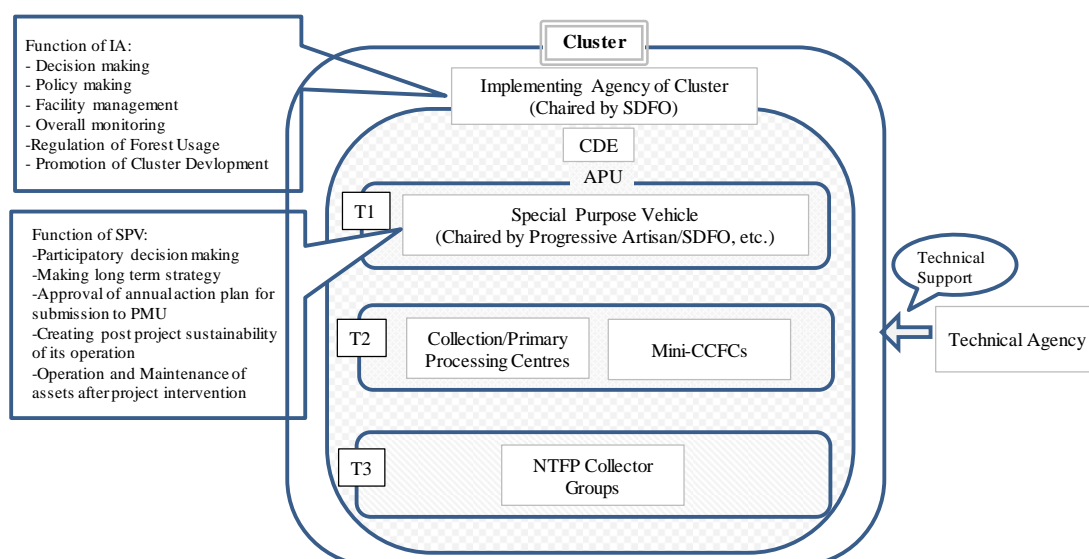


Figure: Structure of Cluster

Based on a Concept Note prepared by SDMU and Detailed Diagnostic Study, a cluster comprised of APU at T1, multiple CCs and MINI-CCFCs at T2 and multiple NTFP Collector Groups shall be created. While overall responsibility of a cluster shall be taken by Implementing Agency (IA); SDFO, operation management and coordination amongst each entity shall be done by Special Purpose Vehicle (SPV), wherein artisans from NTFP Collector Groups and members of CC and MINI-CCFC belong to, with the chairmanship of appropriate stakeholder such as progressive artisan or SDFO, etc, whom shall be assigned by IA. For technical guiding, Technical Agency shall play a role of it. For further detail of technical agency, see below.

For the financial management of cluster, Escrow Account, which is a joint account of SPV and SDFO and required joint signature for transaction, shall be created within IA and audited annually. While any project related fund shall be transferred to the Escrow Account, the fund under the Project shall be differentiated with other financial sources.

Establishing Processing and Value Addition Unit

The process for identification shall be followed as the process below;

- 1) Preparation of Concept Note based on stakeholder (small traders, JFMC members, gathers, artisans dealing with value addition, etc) consultation by SDMU, which shall be submitted to PMU.
- 2) Conducting appraisal for examining and screening Concept Note by Appraisal Committee in PMU.
- 3) Approval of Concept Note by GB with identification of four clusters in principle.
- 4) Conducting Detailed Diagnostic Study for preparation of five-year-action plan of each cluster in Diagnostic Study Reports (DSR), which shall be appraised by banks such as NABARD.

- 5) Formation of SPV of each cluster, which shall take a responsibility of overall management of the cluster under the guidance of Implementing Agency.
- 6) Approval of DSR by PMU and release of first installment with the indemnity bond certificate from SPV.
- 7) Appointment of a Cluster Development Executive (CDE) per cluster from the open market.
- 8) Establishment of maintenance fund with the financial contribution as collected as user fee, assets contribution as well as membership fee by its members PMU in consultation with PMC.
- 9) Subsequent installments shall be released on the receipt of progress report, utilization certificate and action plan approved by cluster SPV, countersigned by SDFO.

APU development at Sub Divisional level shall mainly be facilitated by SDMUs, which are the implementing agency and shall take a responsibility of operation of APU until the time of becoming the enterprise/units in the form of society, company, etc after formation of SHGs of NTFPs collectors from JFMCs and establishment of CCs at local markets/hats for storage and primary processing. Based on DSR, the project shall be located in a land available of TFD or community free from any litigation and forest clearance with easy access by road from the CCs and initiate plan for APU in the third year of the implementation. APU may be linked with CC at T2 or SHGs at JFMCs for the procurement of the raw NTFPs for advance processing, which includes advanced storage, complex processing with high technological input, standardized product development, advanced packaging. Indicative NTFP based unit would be a) large cardamom drying and processing, b) gandhaki oil extraction, c) rubber processing, d) honey processing and value addition as enterprise, and e) bamboo based processing and handicrafts, furniture and other items.

Project Support

It shall be disbursed the entire cost for supporting operation in three installments; 40%, 40% and 20%. Last installment of 20% shall be released after ensuring contribution of artisans as specified by SDMU

Engagement of Implementing Agency and Role

SDMU shall be responsible for implementing CC and APU. The SDMU with the assistance of CCC and CDE shall manage CC and APU.

Engagement of Technical Agency for Value Addition Training or Management and Operationalization

Either a Technical agency as third party shall be engaged for establishment, technical assistance and operation of the Unit or hired for a short specific period for establishing and operationalizing advance processing unit as it requires specific technical expertise.

Since product specific technical training is required, the focus will be on organizing specific training. In case of broom grass, simple training is required for value addition but for making herbal powder of amla (primary processing), specific skill is required to grade, dry, regulate moisture content, storage, maintaining hygiene and do quality packaging following standard. In case of advance processing such as honey production, specialized processing unit and processing techniques are needed to maintain quality. Therefore, persons engaged required training by person having experience in herbal product manufacturing. Bamboo and cane based products also need skills for developing quality products for which Bamboo and Cane development Institute can be engaged. Technical agency shall undertake following activities:

- i. Designing technical aspects of the primary processing at CCs and APUs
- ii. Supervising installation of equipment and accessories at CCs and APUs
- iii. Providing specific technical training to the persons who will be engaged in the processing and value addition activities.

- iv. Providing training on maintenance and up keeping of machineries and tools.

Monitoring

NCE shall be responsible for monitoring of the progress of the activities during pre-establishment, at the time of establishment and operation of enterprises.

Cluster Development Executive (CDE) for Entire Cluster Development

Comprising T1, T2 and T3 structure the NTFP based activities will have a composite cluster. APU shall be managed by CDE in consultation with SDMU. The CDE shall supervise day to day activities, including administration, storage, production and marketing of the products. H/she shall establish linkages with CCs for the regular supply of the raw materials and ensure that there is effective coordination of SHGs with CCs and the APU. CDE shall report to NCE through SDMU.

A person having advanced degree with commerce/marketing/enterprise development with experience in working in advanced processing shall be hired on contractual basis whose salary shall be paid by the project for initial three years. It is expected that, processing unit shall start earning profit and generate sufficient revenue to maintain expenses of human resources, infrastructure and any expenses associated with processing unit by the 6th year of the project implementation.

Marketing Support by Reputed Agency

SCATFORM will produce NTFP based products including agroforestry, handloom and handicrafts which need promotion and marketing. Developing market for a new product is challenging and requires professional effort. Crafts and More established in TFIPAP is a marketing brand which has high potential to be further developed. In order to develop market of products in Tripura and outside, advertisement, byer's sellers meet, participating in fairs and festivals, direct linkages with business organizations and through bidding need to be conducted.

For vibrant marketing, outside agency can be hired by PMU through NCE for three years with conditions of yearly review and renewal of contract. They shall play a role of promoting market and establish market linkages, develop promotional material, advertising, creating advertising and promotional content etc. Marketing will be done also by advertisement/tagline development in newspapers, televisions, and hoardings in the state and outside state. NCE shall monitor the impact of advertisement; one of the indicators may be the volume of sale and areas of geographical areas of market coverage.

Support to Crafts & More

TFIPAP has created a brand "Crafts & More"⁹ for marketing of products made by artisans/JLG and JFMC members. TFIPAP has established 8 outlets at various locations in Tripura depending on the market prospects. The maintaining of those outlets shall be considered based on the analysis of sales and market demands in consultation with NCE and PMC.

SCATFORM shall initiate the process of developing institutional structure, works and activities, rules and regulations for the Crafts & More for the formation of Company or Corporation and support its registration.

Any technical guidance/support for development of handicrafts-based products, branding of NTFP based products, market analysis shall be done by Market Promotion Officer, who shall be supported by the Project for five years, with the support of NCE. After completion of project support, Market Promotion Officer shall be paid by NCE. Especially, the Officer shall analyze and propose the following points;

⁹ Crafts and More is registered under Ministry of Small and Microenterprises (MSME) during 2016-17 and have taken initiative for getting ISO certification and ZED certification to enhance its Brand Value. It has won many awards as Best Stalls in fairs and exhibition.

- Balance and payment of outles as well as financial operation of Crafts&More and MINI-CCFC.
- Lessons learned from the case of MINI-CCFCs whose operation is unpreferable.
- Risk reduction for any predicted circumstances.

Any support including designing and development of handicrafts-based products, branding of NTFP based products, marketing, etc under the projects through shall be disclosed in the form of advertisement in print and electronic media, participation in trade fair and festivals etc.

NTFP marketing through NCE: Application of Achivement in TFIPAP in SCATFORM

In Tripura although large volume of tradable NTFPs is available, marketing of these remains an issue. Low returns to forest collectors are often due to policy distortions arising out of public and private monopolies, and byers hold over the poor and ignorant gatherers. The very nature of dispersed and uncertain production combined with fluctuating demand and undeveloped markets add to the woo of the gatherers. In the specific context of NTFP gatherers, there are several factors contributing to a weak bargaining position vis-a-vis the traders. The reasons can be seen in the nature of the product, seasonal collection, low volumes, fluctuating demands, poverty of gatherers, lack of infrastructure, capacity of gatherers to negotiate with buyers etc.

TFIPAP has successfully designed and developed bamboo-based handicrafts, utility items and 5 types of value added broom from broom grass and promoting and marketing it through “Crafts and More.”

TFIPAP successfully introduced competitive bidding process and fixation of upset/minimum price for dry and green broom grass¹⁰. Robust and well organized mechanism was followed to benefit community of JFMCs areas through organized sale of commercially lucrative broom grass which was earlier purchased by the traders on throwaway prices. The system was introduced in 2010-11, initially with as a pilot project in Unakoti which was later extended to other districts. The system of auction and procedures laid down and implemented for purchase, deposit of advance money for purchase by trades in JFMC account and process of transfer of value of harvest to individual harvester created transparency.

SCATFORM will have strategies and action plans for market promotion by way of auction/bidding, gatherers awareness on collection and market price, and having tie up with bulk byers.

The project shall explore or discover market price of potential commercial NTFPs (e.g. broom grass, large cardamom) and other NTFPs whose royalty are fixed during the season and invite bids from registered traders. There will be two ways of discovering price of NTFPs including broom grass -i) by doing market survey at major trading places and with major traders in Tripura and ii) establishing direct communication or conducting market survey involving major traders/exporters/importers outside state prior to the start of harvesting season

Highest bidders shall be awarded the tender and it shall be ensured that bidders deposit 40% of the total estimated cost of collection to RMU prior to start of collection as first instalment and remaining amount of 30% as second and remaining 30% as last and final instalment so that beneficiaries can immediately get the price of collection.

NCE will issue instruction to DMU to open CCs at Beat Office/Range Office/any other government premises and Beat Officer/Range Officer be made responsible for keeping records of collection and sale including money distributed to beneficiaries.

No cash transaction shall be permitted at any stage.

The bidders shall also deposit a minimum of 5% of the total cost of collection to JFMC account as revolving fund. This revolving fund shall be used by the JFMCs for development activities in the village.

¹⁰ Broom grass sales reached 377 Lak state wise in 2015

NCE in coordination with PMU shall supervise the entire process; make visits to CCs to ensure fair implementation of the trade.

Phase Out Plan of Crafts & More

In order to support the self-sustenance of Crafts & More, the Project shall support its operation for initial five years. Although indirect support such as provision of consultancy and capacity development shall be considered after five years, Crafts & More shall operate the activities with its own financial resources. In case of necessity, State Government shall support it. It is envisaged that by the end of cluster development, SPV would be in a position to take over some of the Crafts & More outlets from NCE. After transferring outlets to clusters, NCE would only intensively promote the brand of Crafts & More and allow the Craft & More hologram to be used by any agency dealing with NTFP products on a payment of a fee to NCE. Craft & More will eventually be positioned as a mark of authenticity of the products crafted by forest people of Tripura. For exploring such possibility, NCE shall facilitate such promotion at the earliest. Additionally, in order to ensure the quality of products sold by Crafts & More, the products shall be certified by NCE. PMU/NCE in consultation from PMC shall consider other possibilities of phase out plan at the time of initiation of the Project.

C3.4 Agroforestry based Livelihoods

C3.4.1 Revision of Agroforestry Models

Objective

The main objective of this activity is to evaluate the suitability and performances of the existing agroforestry models developed in TFIPAP and improve them for more sustainable operations by farmers with various socio-economical (input and skill levels) and agro-ecological (soil, water and slopes) conditions.

Responsible persons

An Agroforestry Task Force (ATF) chaired by Additional Director (Monitoring & Evaluation) shall be constituted at PMU, which shall be responsible for revision. ATF comprises specialists in forestry, horticulture and agriculture. Technical Officers in horticulture and agriculture will be brought to ATF as the specialists on deputation from DOA in the preparatory phase for one year.

ATF is expected (1) to revise agroforestry models, (2) to make necessary planning on agroforestry plantation and procurement, (3) to plan training programmes, and (4) to make necessary planning on Model Organic and Conservation Farms.

Methodology

This revision will be done by changing, adding and/or removing crops and by classifying the new models into different levels of socio-economical and agro-ecological requirements. Field visits to the agroforestry sites supported by TFIPAP should be included to learn lessons such as technical requirements, input requirements, marketing difficulties and so on. Field visits are also necessary to evaluate survival rates of tree crops, orchard management and sales of fruit trees, and continuity and sales of intercrops. Examples are described in the following table. Learning lessons from the experiences of agroforestry by IGDC Project is also necessary for the revision.

Table: Crops of 9 Agroforestry Models in TFIPAP and Possible Actions for New Project

	Area (%)	Forest tree		Fruit tree		Inter crop	
		Name	Point	Name	Point	Name	Point
1	2.3	Bamboo	Survival rate, interference to intercropping	Jackfruit	Pruning, training, manuring, sales	Maize	Continuity, sales
						Pineapple	Expansion, sales
2	6.4	Gamar	Survival rate, growth	Lemon	Pruning, training, manuring, sales	Pigeon pea	Expansion, sales
						Ginger	Expansion, sales
3	16.4	Bamboo	Survival rate, interference to intercropping	Areca nut	Pruning, training, manuring, sales	Sesame	Expansion, sales
						Maize	Continuity, sales
						Black pepper	Continuity, sales
4	9.0	Acacia	Growth, effect to intercrops, further area expansion	Litchi	Pruning, training, manuring, sales	Maize	Continuity, sales
				Lemon	Pruning, training, manuring, sales	Turmeric	Expansion, sales
5	5.0	Teak	Growth	Jackfruit	Pruning, training, manuring, sales	Maize	Continuity, sales
						Ginger	Expansion, sales
6	43.2	Bamboo	Survival rate, interference to intercropping	Mango	Pruning, training, manuring, sales	Maize	Continuity, sales
						Pineapple	Expansion, sales
7	2.7	Agar	Growth	Areca nut	Pruning, training, manuring, sales	Turmeric	Expansion, sales
						Black pepper	Continuity, sales
8	14.2	Acacia	Growth, effect to intercrops, further area expansion	Banana	Pruning, training, manuring, sales	Turmeric	Expansion, sales
9	0.8	Acacia	Growth, effect to intercrops, further area expansion	Orange	Pruning, training, manuring, sales	Turmeric	Expansion, sales
				Papaya	Pruning, training, manuring, sales		

Potential new crops

Potential new crops shown in the next table need to be evaluated by ATF for possible inclusion in the new agroforestry models. The revision of agroforestry models will be conducted for a year in the preparatory phase of the project in order to start the first batch of plantation in the beginning of the implementation phase (April 2020).

Table: Examples of Potential New Crops for Agroforestry Models

	Crops	Characteristics
1	Large cardamom	High value, low volume, shade plant, perennial
2	Coffee	High value, low volume, shade plant, perennial
3	Betel vine	High value, shade plant, perennial
4	Broom grass	Broom, fodder, sun-loving, perennial
5	Millet	Food, feed, brewery, sun-loving,
6	Mosambi (<i>Citrus limetta</i>)	High value, good market demand, slow return, perennial
7	Cassava	Food, feed, low tech, low cost, sun-loving, easy propagation
8	Soybean	Food, feed, fertility improver, low tech, quick return, sun-loving,
9	Oilseeds	Food, feed, low tech, quick return, sun-loving
10	Vegetables	High value, quick return, mostly sun-loving, market risk

a) Plantation of Agroforestry Crops and b) Follow Up**Objective**

The main objective of agroforestry plantation is to provide sustainable forest cover and income generation from understorey crops in RoFR land. The opportunities of income generation from RoFR land will ensure the sustainability and maintenance of vegetation in RoFR land.

Cost and expected conversions

The cost of agroforestry plantation shall be borne by the Project with financial convergence with MGNREGA, which would cover 50% of the total cost. In addition, technical and financial convergences with DOA such as the provision of fruit tree seedlings, intercropping seeds and day-to-day technical guidance are expected as well.

Planting activities

The process of plantation activities supported by the project is shown in the following table. First, the preparation starts with motivating JFMC members and getting them interested in agroforestry by inviting them to awareness workshops. Its selection is a first come first served basis. Then, the RoFR lands of interested JFMC members get physical demarcation, and JLG group formation follows. After this comes the selection of a suitable agroforestry model and land preparation such as layouting and manuring.

Plantation of forest trees and fruit trees need to be conducted just before rainy season (around April). Intercropping can also start in this season (around April) or in the end of rainy season (around September). Then, the first orchard management such as gap filling, plant protection, manuring, pruning and training will be conducted in the immediate winter period when the growths of trees are slow. This follow up activity should be conducted for 3 years until the first harvest of fruit trees begins or farmers learn the activity by doing.

Table: Activities in Agroforestry Plantation

Activities	Items
Preparation	1. Awareness raising among JFMC members 2. Demarcation of RoFR land 3. Forming a JLG for a group of RoFR land 4. Model selection and land preparation
Plantation	5. Plantation of forest trees and fruit trees
Follow up	6. Intercropping of understorey crops (continuing for 3 to 5 years) 7. Orchard management such as gap filling, plant protection, manuring, pruning, training and thinning of canopy and middle tier fruit trees (continuing for 3 years)

Responsible persons for plantation

LC/COs with biology-related Bachelor of Science backgrounds (agriculture, animal husbandry etc) who are stationed in RMUs are responsible for conducting agroforestry plantation in their ranges. Additional Director (Monitoring, Evaluation & Biodiversity) at PMU is responsible for the whole plantation activities throughout the project period.

Expectation to DOA

DOA is expected to conduct their regular work such as technical assistance in fruit farming and intercropping in the agroforestry planted area of the project. To ensure this work during and after the project period, the linkage with the project target areas and the responsible Village Level Workers (VLWs) of DOA should be established by frequently inviting them to village level activities such as agroforestry plantation, gap filling, manuring, pruning, etc.

Expectation to MGNREGA

MGNREGA is expected to provide financial convergence on labour cost of agroforestry plantation through Department of Rural Development (DRD). MGNREGA guarantees rural employment for 100 days per person of unskilled wage in a year, and up to 50 % can be non-wage component.

Support timeline

As shown in the following table, the process of plantation can be conducted in 4 batches in the implementation phase of 7 years. Field level technical supports need to be provided by LC/COs for the process of plantation and follow-up of fruit trees and intercropping for 3 years. Beat level TFD officers and FFs in JFMCs help them to carry out these activities.

Table: Timelines of Agroforestry Activity Supports

	Preparatory Phase	Implementation Phase						
Batch	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
1st	Preparation	Plantation, Follow up	Follow up	Follow up	Follow up			
2nd		Preparation	Plantation, Follow up	Follow up	Follow up	Follow up		
3rd			Preparation	Plantation, Follow up	Follow up	Follow up	Follow up	
4th				Preparation	Plantation, Follow up	Follow up	Follow up	Follow up

Training and workshop

The following table shows trainings and workshops on agroforestry and orchard management. For the plantation and technical supports, LC/COs need to have sufficient knowledge and experiences on agroforestry and orchard management to provide field-level technical guidance to JLGs. They also need to work as trainers to provide OJT to Beat level TFD officers and FFs in JFMCs. FFs also need to receive training on basic knowledge and experiences on agroforestry and orchard management as well because they are the first contact persons at the field level in the Project.

Table: Suggested training and workshop on agroforestry and orchard management

SN	Topic	Content	Duration	Place	Participant	Trainer / organiser	Timing
1	TOT in agroforestry	Tree plantation, soil and plant nutrient, plant protection, intercropping	3 days	ICAR / Agriculture College	LC/COs	ICAR / Agriculture College / DOA	Preparatory Phase
2	TOT in orchard management	Plant protection, manuring, pruning, training, intercropping	3 days	ICAR / Agriculture College	LC/COs	ICAR / Agriculture College / DOA	Preparatory Phase
3	Awareness workshop	Basic agroforestry and IGAs (livestock, fisheries)	1 day	RMU level	JFMC members, FFs	DMU / SDMU / RMU	Implementation Phase

In addition, Beat level TFD officers and FFs will be provided with OJT at JFMC level on basic fruit and intercrop farming in the technical supports for plantation and follow-ups to JLGs by LC/COs. In the later stage of the implementation phase, FFs and Beat level TFD officers should be able to provide technical supports to JLGs without the presence of LC/COs.

Responsible persons for training and workshop

ATF is responsible for the detailed planning of these trainings and technical supports in the preparatory phase. ATF is also responsible for conducting training on TOT in agroforestry and TOT in orchard management to LC/COs in the preparatory phase.

LC/COs are responsible for conducting Awareness workshop on agroforestry and IGAs for JFMCs at field level. Additional Director (Monitoring & Evaluation) at PMU is responsible for the whole agroforestry training activities throughout the project period.

C3.4.2 Support for marketing***Objective***

The main objective of support for marketing is to provide agroforestry producers (JLGs) and its marketeers (SHGs) with technical skills and information on marketing and processing in order for them to have better options in selling their produce in a sustainable way.

Responsible persons for training

LC/COs are responsible for providing training to JLG/SHGs at field level. At central level, Crafts & More and NCE are responsible for providing training on marketing and processing to LC/COs.

ATF with the help of Crafts & More and NCE are responsible for the detailed planning of these trainings in the preparatory phase.

Additional Director (Monitoring & Evaluation) at PMU is responsible for the whole training activities for marketing and processing of agroforestry produce throughout the project period.

Responsible persons for marketing support

LC/COs and Crafts & More are responsible for providing marketing supports to JLG/SHGs. They are also responsible for promoting cooperatives and SHG consortiums.

Training and marketing support

As shown in the following table, TOT will be provided for LC/COs by Crafts & More and NCE on the skills of harvesting, grading, packaging, market information, simple food processing, cooperatives and SHG consortia and buyer-producer meetings. LC/COs will provide technical supports to JLG members at field level with the help of FFs and Beat level TFD officers.

LC/COs with FFs and Beat level TFD officers will provide technical supports to JLG/SHGs who are willing to conduct marketing and processing activities of agroforestry produce at field level.

During these field level technical supports to JLG/SHGs by LC/COs, Beat level TFD officers and FFs will be provided with OJT at JFMC level on marketing and processing. In the later stage of the implementation phase, FFs and Beat level TFD officers should be able to provide technical supports to JLG/SHGs without the presence of LC/COs.

LC/COs encourage JLG/SHGs to engage in marketing and processing activities using funds from JFMCs and commercial banks. LC/COs recommend high quality processed products produced by JLG/SHGs such as mango pickles and pineapple jam to advertise and sell in Crafts & More outlets. LC/COs and Crafts & More also provide supports to successful JLG/SHGs to form cooperatives and SHG consortia for sustainable marketing and processing on their own.

Table: Suggested Training on Agroforestry Marketing

SN	Topic	Content	Duration	Place	Participant	Trainer / organiser	Timing
4	TOT in marketing & processing	Harvesting, grading, packaging, market information, food processing, cooperatives / SHG consortiums & buyer-producer meetings	3 days	PMU level	LC/COs	Crafts & More / NCE	Implementation Phase

C3.5 Livestock and Fish Farming based Livelihoods**C3.5.1 Support for livestock farming*****Objective***

The main objective of this activity is to provide necessary technical skills to SHGs who are willing to start the farming of pigs, poultry, cow and/or goats. Support for pig farming is especially important because pig farming is the most popular IGA among forest dwellers and helps them reduce dependency on the forest resources.

Cost and expected convergence

The cost of animal husbandry will be borne by SHGs, who will receive loans from the RFs of JFMCs and commercial banks if necessary. Technical and financial convergences from ARDD such as the provision of animal health camps and day-to-day technical guidance are expected.

Responsible persons

LC/COs are responsible for providing technical supports on livestock farming at field level. Support for livestock farming to SHGs is provided through training and day-to-day technical guidance.

Animal Husbandry Task force (AHTF) chaired by Additional Director (Planning and Implementation) at PMU is responsible for the detailed planning of all the trainings on livestock farming in the preparatory phase.

AHTF is also responsible for conducting TOT in animal husbandry in the preparatory phase. AHTF comprises forestry officers and specialists in animal husbandry. Technical officers as the specialists in animal husbandry will be brought to AHTF on deputation from ARDD in the preparatory phase for 1 year.

Additional Director (Planning and Implementation) at PMU is responsible for the whole training and support activities for livestock farming throughout the project period.

Expectation to ARDD

ARDD is expected to conduct their regular work such as providing technical assistance in animal husbandry and holding animal health camps for SHGs in the project areas. To ensure this work during and after the project period, the linkage with the project target areas and the responsible VLWs and para-vets of ARDD sub-centres should be established by frequently inviting them to village level activities such as training and workshops.

Training and support

The following table shows trainings on livestock farming. TOT will be conducted for LC/COs who are responsible for providing training and field level technical supports on livestock farming activities to SHGs.

Training on livestock farming to SHG members will be initially provided by ARDD along with LC/COs, who will receive TOT training and will take over the task later on.

FFs and Beat level TFD officers who will receive training along with SHG members will have OJT in day-to-day field level technical supports to SHGs by LC/COs. In the later stage of the implementation phase, FFs and Beat level TFD officers should be able to provide most of day-to-day technical supports to SHGs without the presence of LC/COs.

Table: Suggested Training and Workshop on Livestock Farming

SN	Topic	Content	Duration	Place	Participant	Trainer / organiser	Timing
5	TOT in animal husbandry	Farming of pigs, poultry, cow and goat	5 days	CVSAH / RK Nagar Farm Complex	LC/COs	CVSAH / ARDD	Preparatory Phase
6	Animal husbandry training	Farming of pigs, poultry, cow and goat	3 days	RMU level	SHG members, FFs, TFD	ARDD / LC/COs	Preparatory & implementation Phases
3	Awareness workshop	Basic agroforestry and IGAs (livestock, fisheries)	1 day	RMU level	JFMC members, FFs	DMU/SDMU /RMU	Implementation Phase

C3.5.2 Support for fish farming

Objective

As in the case for animal husbandry, the main objective of this activity is to provide necessary technical skills to SHGs who are willing for fish farming. Support for fish farming is important because fish farming is the second most popular IGA among forest dwellers in the Phase 1 Project and helps them reduce dependency on the forest resources. The cost of fish farming will be borne by SHGs, who will receive loans from the RFs of JFMCs. In addition, technical and financial convergences from Department of Fisheries (DOF) such as the provision of fingerlings and day-to-day technical guidance need to be sought as well.

Cost and expected convergence

The cost of fish farming will be borne by SHGs, who will receive loans from the RFs of JFMCs and commercial banks if necessary. Technical and financial convergences from Department of Fisheries (DOF) such as the provision of fingerlings and day-to-day technical guidance are expected.

Responsible persons

LC/COs are responsible for providing technical support on fish farming at field level. Like in the case of animal husbandry, support for fish farming to SHGs is provided through training and day-to-day technical guidance.

Fish Farming Task Force (FFTF) chaired by Additional Director (Planning and Implementation) at PMU is responsible for the detailed planning of all the trainings on fish farming in preparatory phase.

FFTF are also responsible for conducting TOT in fisheries in the preparatory phase. FFTF comprises forestry officers and specialists in fisheries. Technical officers as the specialists in fisheries will be brought to FFTF on deputation from DOF in the preparatory phase for 1 year.

Additional Director (Planning and Implementation) at PMU is responsible for the whole training and support activities for fish farming throughout the project period.

Expectation to DOF

DOF is expected to conduct their regular work such as providing technical assistance in fisheries and raising awareness on the use of good fingerlings for SHGs in the project areas. To ensure this work during and after the project period, the linkage with the project target areas and the responsible VLWs of DOF should be established by frequently inviting them to village level activities such as training and workshops.

Training and support

The following table shows trainings on fish farming. TOT will be conducted for LC/COs who are responsible for providing training and field level technical supports on fish farming activities to SHGs.

Training on fish farming to SHG members will be initially provided by DOF along with LC/COs, who will receive TOT training and will take over the task later on.

FFs and Beat level TFD officers who will receive training along with SHG members will have OJT in day-to-day field level technical supports to SHGs by LC/COs. In the later stage of the implementation phase, FFs and Beat level TFD officers should be able to provide most of day-to-day technical supports to SHGs without the presence of LC/COs.

Table: Suggested trainings on fish farming

SN	Topic	Content	Duration	Place	Participant	Trainer / organiser	Timing
7	TOT in fish farming	Fish farming, integrated fish-pig farming	5 days	Fisheries College / DOF	LC/COs	Fisheries College / DOF	Preparatory Phase
8	Fish farming training	Fish farming, integrated fish-pig farming	3 days	RMU level	SHG members, FFs, TFD	DOF / LC/COs	Implementation Phases
3	Awareness workshop	Basic agroforestry and IGAs (livestock, fisheries)	1 day	RMU level	JFMC members, FFs	DMU / SDMU / RMU	Implementation Phase

C3.5.3 Support for Marketing in Livestock and Fish farming***Objective***

The main objective of support for marketing is to provide livestock and fish producing SHGs with technical skills and information on marketing and processing in order for them to have better options in selling their produce in a sustainable way.

Responsible persons for training

LC/COs are responsible for providing training to SHGs at field level. At central level, Crafts & More and NCE are responsible for providing training on marketing and processing to LC/COs.

AHTF and FFTF with the help of Crafts & More and NCE are responsible for the detailed planning of these trainings in the preparatory phase.

Additional Director (Planning and Implementation) at PMU is responsible for the whole training activities for marketing and processing of livestock and fish produce throughout the project period.

Responsible persons for marketing support

LC/COs and Crafts & More are responsible for providing marketing supports to SHGs. They are also responsible for promoting cooperatives and SHG consortiums.

Training and marketing support

As shown in the following table, TOT will be provided for LC/COs by Crafts & More and NCE on the skills of packaging, market information, simple food processing, cooperatives and SHG consortiums and buyer-producer meetings.

LC/COs with FFs and Beat level TFD officers will provide technical supports to SHGs who are willing to conduct marketing and processing activities of livestock and fish produce at field level.

During these field level technical supports to SHGs by LC/COs, Beat level TFD officers and FFs will be provided with OJT at JFMC level on marketing and processing. In the later stage of the implementation phase, FFs and Beat level TFD officers should be able to provide technical supports to SHGs without the presence of LC/COs.

LC/COs encourage SHGs to engage in marketing and processing activities by using funds from JFMCs and commercial banks. LC/COs recommend high quality processed products produced by SHGs such as dried fish and smoked pork to advertise and sell in Crafts & More outlets. LC/COs and Crafts & More also provide supports to successful SHGs to form cooperatives and SHG consortia for sustainable marketing and processing on their own.

Table: Suggested trainings on marketing of livestock and fish farming

SN	Topic	Content	Duration	Place	Participant	Trainer / organiser	Timing
4	TOT in marketing & processing	Packaging, market information, food processing, cooperatives / SHG consortiums & buyer-producer meetings	3 days	PMU level	LC/COs	Crafts & More / NCE	Implementation Phase

C3.5.4 Support for training of para-vet assistants***Objective***

The main objective of this activity is to provide self-employed para-vet assistants (also known as livestock assistants) who provide veterinary information, linkage to doctors and para-vets, artificial insemination (AI) and vaccination at every JFM area under the Project. Support for training of para vet assistants enables to supplement Government veterinary services and contribute to reducing mortality rates and increasing productivities of livestock in the JFM areas under the Project.

Cost and expected conversions

The cost of training of para-vet assistants will be borne by the Project. The cost of setting up of para-vet assistant units will be borne by the assistants themselves using loans from the RFs of JFMCs and commercial banks if necessary. ARDD is expected to provide technical convergences.

Responsible persons

JFMCs are responsible for selecting candidates. LC/COs are responsible for sending them to training and providing follow up supports for the operation of para-vet assistant units.

AHTF chaired by Additional Director (Planning and Implementation) at PMU is responsible for the detailed planning of this training and setting up para-vet assistant units in the preparatory phase.

Additional Director (Planning and Implementation) at PMU is responsible for the whole training and support activities for para-vet assistants throughout the project period.

Expectation to ARDD

ARDD is expected to conduct their regular work through their sub-centres such as prescription, medication and health camps for animal husbandry under the project area.

ARDD is also expected to provide technical supports such as training para-vet assistants, linking para-vet assistants to ARDD sub-centres, and providing day-to-day technical assistance for AI and vaccination. To ensure this work during and after the project period, the linkage with para-vet assistants and para-vet sub-sentres of ARDD should be established by frequently inviting them to village level activities such as training and workshops.

Training and support

Candidates for para vet assistants need to have passed matriculation or above. The first priority is given to 600 Door Step AI Workers (DSAIW) who attended AI or vaccination training by ARDD in the past and are currently self-employed in providing AI or vaccination services to JFMC members or nearby villagers.

Depending on their past training history, they need to receive training on para-vet assistant course for up to 6 months in ARDD Farm for information and skills in AI, vaccination, animal nutrition, animal health etc. They need to be selected and nominated by the JFMCs. After the completion of the course, they are expected to set up para-vet assistant units, vaccinate animals and give AI. They can set up SHGs for this and use loans from the RFs of JFMCs and commercial banks if necessary.

Table: Training on Para-vet Assistant

SN	Name	Contents	Duration	Place	Participants	Trainer / organiser	Timing
9	Para-vet assistant residential training	Para-vet assistant course	180 days	RK Nagar Farm Complex	JFMC members (matriculation level)	DOF	Implementation Phase

C3.5.5 Organic farming based livelihoods**a) Support for setting-up model organic and conservation farms*****Objective***

The main objective of this activity is to provide technical skills and information on setting up model organic conservation farms to agroforestry producers (JLGs).

Cost and expected conversions

Setting-up model organic and conservation farms follows the same process of agroforestry plantation. The cost will be primarily borne by the Project but financial convergence with MGNREGA is also expected. In addition, technical and financial convergences from MOVCD through DOA such as organic certification are expected as well.

Responsible persons

ATF chaired by Additional Director (Monitoring & Evaluation) at PMU is responsible for the detail planning of setting up of organic and conservation farms in the preparatory phase.

LC/COs are responsible for providing supports to JLGs on setting up of organic and conservation farms at field level.

Additional Director (Monitoring, Evaluation & Biodiversity) at PMU is responsible for the whole activities for setting up of organic and conservation farms throughout the project period.

Expectation to DOA and MOVCD

MOVCD in Northeastern Region is expected to provide technical convergence on organic farming and organic certifying process through DOA. The next phase of MOVCD will start from 2020/21 for the support of organic farming in 4000 ha or 3 years. The site for the new phase has not been selected yet, and there is possibility of collaboration on organic agroforestry by allocating some parts of the RoFR area of the Project to the support area of MOVCD.

Methodology

This activity needs to be conducted on a trial basis in a few model JFM areas or JLGs who are currently farming RoFR with no chemical inputs. In the preparatory phase, ATF conducts survey on the RoFR areas for the site selection of model organic and conservation farms. The priority is given to RoFR lands where no chemical fertilisers or pesticides have been used, which is easily accessible to road for visits and demonstration purposes, where farmers understand the value of organic farming very well, and so on. The detailed selection criteria and the selection of model organic and conservation RoFR lands will be conducted by ATF in the preparatory phase. After this, the setting up of model organic and conservation farms follows the same process of other agroforestry plantation.

ATF needs to assess the feasibility of chemical free farming in the context of agroforestry in RoFR lands in Tripura. In addition, several skills and techniques will be used to show sustainable organic agroforestry such as application of locally made farm yard manure and organic pesticides and various conservation farming techniques such as low cost contour bunds, bench terrace, half-moon terraces, contour trenching, grassed waterways and zero-tillage methods. If organic farming and conservation farming are proved feasible for wider dissemination, they can be extended beyond the model farms.

C3.5.6 Support for organic production and marketing

Objective

The main objective of this activity is to provide technical skills and information on the production and marketing of organic and conservation farming to agroforestry producers (JLGs) for value addition and sustainable farming.

Cost and expected conversions

Support for organic production follows the same process of agroforestry plantation. The cost will be primarily borne by the Project but financial convergence with MGNREGA is also expected. In addition, technical and financial convergences for production and marketing from MOVCD through DOA such as organic certification are expected as well.

Responsible persons

ATF chaired by Additional Director (Monitoring, Evaluation & Biodiversity) at PMU with is responsible for the detailed planning of organic agroforestry production and marketing in the preparatory phase.

LC/COs are responsible for providing technical supports to JLGs on setting up of organic agroforestry production and marketing at field level.

Additional Director (Monitoring, Evaluation & Biodiversity) at PMU is responsible for the whole activities for organic production and marketing throughout the project period.

Expectation to DOA

DOA is expected to conduct their regular work such as technical assistance in organic fruit farming and intercropping in the agroforestry planted area of the project. To ensure this work during and after the project period, the linkage with the project target areas and the responsible Village Level Workers (VLWs) of DOA should be established by frequently inviting them to village level activities such as agroforestry plantation, gap filing, manuring, pruning, etc.

Expectation to MOVCD

MOVCD in Northeastern Region is expected to help JLGs set up farmer producer companies (SHG Consortia) to earn organic certificates through one of 28 accredited certification bodies under National Programme for Organic Products (NPOP) implemented by Ministry of Commerce.

MOVCD in Northeastern Region is also expected to help JLGs and farmer producer companies (SHG Consortia) use their products under the name of an organic product brand called 'Tripureswori Fresh Organic' developed by MOVCD for Tripura State. It is also expected to help them sell their organic products in its organic outlet planned near the City Centre Mall.

Training and support

As shown in the following table, TOT will be provided for LC/COs by Agriculture College, DOA and/or MOVCD on information and skills on organic farming, certification, marketing and conservation farming. Workshops are necessary to raise awareness of JFMCs and JLGs on organic farming and getting them interested in organic agroforestry in their RoFR land.

After selection of model organic and conservation farms, selected LC/COs with FFs and Beat level TFD officers will provide technical supports to the selected JFMC/JLGs at field level.

In addition, Beat level TFD officers and FFs will be provided OJT on organic and conservation farming at JFMC level during the technical supports to JLGs by LC/COs. In the later stage of the implementation phase, FFs and Beat level TFD officers should be able to provide technical supports

to JLGs without the presence of LC/COs, if organic farming and conservation farming are proved feasible for dissemination.

The detailed planning of these trainings and technical supports will be conducted by the ATF with the help of MOVCD, Crafts & More and/or NCE.

Table: Training and Workshop on Organic Farming

SN	Name	Contents	Duration	Place	Participants	Trainer / organiser	Timing
10	TOT in organic farming	Organic farming, certification, marketing & conservation farming	2 days	Agriculture College / DOA / MOVCD	LC/COs	Agriculture College / DOA / MOVCD	Preparatory Phase
11	Awareness workshop (organic)	Organic and conservation farming	1 day	RMU level	JFMC members, FFs	DMU/SDMU/RMU	Implementation Phase

C3.6 Ecotourism development

Tripura Forest Department (TFD) has recognized the interlinkage of nature conservation and ecotourism. Tripura Ecotourism Policy proclaims, because of the enormous economic, ecological, recreational and conservation potential; ecotourism sector in the state needs to be developed as a sustainable, equitable, community based endeavour for improving the living standards of host communities (Tripura Ecotourism Policy, 2004). As the custodian of 60% of state's geography, TFD intends to take leadership in the state to develop ecotourism in a planned, structured and sustainable manner. For this, TFD needs external assistance for a specified duration wherein both technical and financial support can be availed. Considering the complementarity of ecotourism on the main objectives of upcoming SCATFORM, the project takes up some of the key ecotourism development activities under the Livelihood Development component.

For ecotourism development of Tripura, key stakeholders have been identified as TFD, Tripura Tourism Department, Tourism industry, Community groups, etc.

Table: Ecotourism in Tripura- Key stakeholders

Stakeholder Type	Roles & Responsibilities	Function
TFD	Leadership role- Focal department for ecotourism development in Tripura	<ul style="list-style-type: none"> • Planning & Development of ecotourism • Regulatory framework, Policy & strategy formulation • Institutionalizing ecotourism through establishing an Ecotourism Development Organisation • Product development, Capacity development, marketing, etc. • Co-ordination between departments, other stakeholders, private
Tripura Tourism Department	Support ecotourism initiatives through financial and technical means	<ul style="list-style-type: none"> • Promotion & marketing of ecotourism • Financial support through budgetary allocation and others • Technical support
Other Government Departments	Offer support through internal schemes for ecotourism development	<ul style="list-style-type: none"> • Ecotourism development can be included in the departmental activities and offer possible support
Tourism	Co-operate, collaborate and initiate ecotourism in a	<ul style="list-style-type: none"> • Investments in ecotourism projects • Infrastructural development

Industry	bigger way	<ul style="list-style-type: none"> • Provisioning of world class service
Community Groups	Proactively involve in community ecotourism initiatives at the local level.	<ul style="list-style-type: none"> • Planning and development of ecotourism at destination level • Participate & maximise benefits from ecotourism

The ecotourism component in the new project offers support for the sectoral development at two levels – a *macro level* and a *micro level*.

Macro level interventions envisaged are;

- Policy, strategic, institutional framework for streamlining ecotourism development
- Promotion & Marketing of Ecotourism opportunities
- Capacity development in ecotourism
- Creation of an Ecotourism development fund

Micro level interventions considered;

- Enhance and upgrade ecotourism destinations and facilities
- Development of ecotourism in new destinations

C3.6.1 Policy, strategic, institutional framework for streamlining ecotourism development

Under this component, three project activities are considered- a) Review and redrafting of Tripura Ecotourism Policy, b) Formulation of a vision and development strategy, and c) Establishment of an Ecotourism Development Organisation.

Details of activities which will be taken up under the project are elucidated below;

a) Review and redrafting of Tripura Ecotourism Policy

The existing ecotourism policy of Tripura is more than a decade old. It is timely and appropriate to review and revise the ecotourism policy of Tripura. The revision of ecotourism policy should be undertaken in a participatory and consultative method through public hearings at regional and state level.

For this a consultative committee can be constituted under the TFD with representation from related departments (Department of Tourism, Department of Culture, Department of Rural Development, Department of Public Works Department, etc.), NGO (two local NGOs & one national NGO), Tourism industry association (one state level & one national level), Tripura Tourism Development Corporation.

b) Formulation of a vision and development strategy

A vision and strategy will be prepared which would enunciate the ecotourism development of Tripura. Among other things the strategy would explore various modes of ecotourism development possible in Tripura like PPP, Community enterprises, etc. It will broadly cover critical areas like product development, partnership building, community linkage, marketing and promotion, capacity, building, etc.

c) Establishment of an Ecotourism Development Organisation

For the structured and organized development of ecotourism in the state an Ecotourism Development Organisation (EDO) will be established by the State Govrenment with project assistance. The formation of EDO is preceded by reformulation of the ecotourism policy and development strategy. Through a technical study various options will be explored by referring to other examples in other states.

Following activities will be taken up under the project;

- (a.) Feasibility study on the institutional mechanism for ecotourism development in Tripura
 - Although the form of organization as PPP mode including setting up shall be explored, based on the feasibility study, its institutional arrangement shall be finalized with the approval of the State Government and concurrence of JICA for disbursement of Ecotourism Development Fund.
- (b.) Preparation of an Organizational Manual for EDO depending upon the form of the organization.
- (c.) Setting up of an Ecotourism Development Fund: Ecotourism Development Fund will be created under the Project. This fund will be utilised mainly for carrying out the following two activities.
 - A) To meet initial expenses of the Ecotourism Development Organisation B) To extend financial support to community groups and entrepreneurs to start ecotourism-based businesses. This fund will be held and disbursed by EDO. Beneficiaries will have to prepare a business plan and the loans under this scheme will be routed through respective EDC/JFMC in the area.

C3.6.2 Promotion and Marketing of ecotourism

There are many ecotourism destinations, attractions and products in Tripura and they need to be publicized and promoted in different markets in India and other countries. The project can assist the marketing and promotion of ecotourism by undertaking the following activities;

a) Design and development of an ecotourism website

An exclusive website for Tripura ecotourism will be designed and developed. This website will act as the gateway to ecotourism of Tripura and will have provision for online booking also. This activity will be outsourced to an experienced web developer.

b) Publication and promotional materials

As part of promoting ecotourism features of Tripura, quality publications showcasing the ecotourism features of the state can be prepared and published in this activity. For example, Handbook of Birds of Tripura, Visitors Guidebook on Biodiversity & Culture of Tripura, etc. Promotional and marketing materials like brochures, booklets, pamphlets, banners, etc. will be designed and printed highlighting the ecotourism features, products and packages of Tripura for various source markets.

c) Assistance to participate travel trade fairs

This activity is important to publicize ecotourism products and build the supply chain with main source markets like Bangalore, Pune and Delhi. Assistance will be given for participating in two travel fairs in a year. EDO can coordinate this activity and this can be implemented from the project midterm period (fifth year onwards) by the time when more products and facilities are available.

C3.6.3 Upgrading of Eco Parks

Eco parks are flagship ecotourism initiative of TFD and they have expanded in numbers and popularity. These parks offer excellent opportunities for outdoor-based environment learning for diverse visitor types especially for student groups. For this, these parks need to be repositioned as sites of nature education revamped with additional features and facilities. Conceptually NLC act as a bridge that connects the environment and people under the guidance of trained professional to experience and develop relationships with nature. These centres offer visitors with learning experience through interpretative programs, activities, events, etc. The target visitors for NLCs are school children, college students, special interest groups like birdwatchers, cultural enthusiasts, tourists, families, etc.

Under the project, three Eco parks in Tripura viz., Tepania Eco Park, Baramura Eco Park and Unakoti Eco Park will be developed as model NLC. Although these centres are primarily promoted for day-based activities, by developing camping facilities overnight stay will be promoted.

The following features and facilities will be provisioned in these Eco parks as add-ons;

Table: Features and Facilities Provisioned in Eco parks

Sr. No.	Facilities / Items	Quantity	Remarks
1	Class room cum Activity Centre	2	- to accommodate 50 students at a time - Audio visual facilities
2	Mini Museum cum Interpretation Centre and/or Laboratory	1	
3	Camping site	1	- Tented accommodation - capacity of 30 children
4	Administrative Office	1	
5	Dining place	1	
6	Toilets	1 block	- Separate for girls and boys
7	Parking space		
8	Indoor / Outdoor exhibits		
9	Mini Bus	1	- 25-seater bus
10	Staffing & Capacity building		-
11	Development of Programs & activity modules		
12	Procurement of equipment		- Activity equipment

NLC is conceived in self-sustaining mode and under the project an Operational plan will be developed covering the sustainability aspects of the centre.

C3.6.4 Support to existing ecotourism destinations

The project will extend support to existing ecotourism destinations like Sepahijala Wildlife Sanctuary and Trishna Wildlife Sanctuary (supported in TFIPAP) to improve their ecotourism profile. This will be primarily carried out through the preparation of an operational plan to maximise their potential by utilising their existing infrastructure like cottages and crafting highly engaging ecotour programs, capacity building and marketing and promotional support.

C3.6.5 Development of new ecotourism destinations

To develop ecotourism further in Tripura, new locations need to be developed as ecotourism destinations keeping in mind different market segments. The project over its 10-year period will develop ecotourism in four new destinations of the state wherein 1 destination will be developed in every 2-year period. For each destination a cluster development approach will be followed wherein group of villages (about 10 nos.) in the adjoining area will be taken up for ecotourism development. At the cluster level an integrated ecotourism development plan will be prepared through active community participation.

The project will adopt a Community Based Eco-Tourism (CBET) approach wherein local community institutions like EDC/JFMC/SHG etc. will act as the implementing units. For the smooth functioning of ecotourism, a sub-committee on ecotourism will be formed under EDC/JFMC, which will work full time for ecotourism development. The Tripura EDO will act, as the Technical Support Unit and the project activities will be implemented at the destination through DFU. To inculcate professional and enterprising approach from the beginning, EDO can also explore possibilities of involving private sector under PPP mode. EDO will also consider possibilities of convergence with other government departments and schemes for the destination development.

The development works at each destination will include development of a Community Ecotourism Centre, design and development of ecotour activities, development of accommodation units (log huts/camping areas, homestays, etc.), capacity development, institutionalisation, marketing, ecotourism enterprise development etc. Project support will also be extended to small-scale community-based enterprises (e.g.; souvenir making, food products, laundry service, etc.), which can be linked to ecotourism.

Table: Development of new ecotourism destination: Proposed development activities

PROPOSED ITEMS	DETAILS
INFRASTRUCTURAL PROVISIONING	
Community Ecotourism Centre (CEC)	CEC will be multipurpose (tourist facilitation & amenities, office, equipment storage, etc.) building act as a base for ecotourism activities in the destination.
Accommodation facility	Ecolodge /Camping site (location specific and based on the feasibility study)
NON-INFRASTRUCTURAL ITEMS	
Ecotourism products and package development	Develop various ecotourism based products and packages
Procurement of equipment	Based on local conditions equipment like boats, mountain bikes, water sports items, etc. can be procured
Capacity Development	Trainings to undertake various ecotourism activities and services like interpretative guiding, facility management, service management, etc.
Institutionalisation	Support to evolve a CBET organisation at destination level
Enterprise development assistance	Financial (loans) and technical support for starting small business linked to ecotourism
Marketing	Marketing and promotion of ecotourism products and package in target markets.

At the destination level the following project activities is envisaged;

- **Scoping study:** Identify group villages through a scoping exercise as well as from the results of micro planning.
- Evolve a viable community-based institutional mechanism for the management of ecotourism at the destination level
- **Ecotourism Resource Mapping:** In a participatory approach, carry out Ecotourism resource mapping exercise of the destination and preparation of Destination Ecotourism development plan
- **Feasibility assessment:** Conduct a feasibility study of ecotourism in the destination
- **Ecotourism Center establishment:** Establish Ecotourism centre, which will have facilities like tourist facilitation, interpretation centre, etc.
- **Assistance to ecotourism based enterprise development:** Provide assistance (technical) and facilitating loans (including Ecotourism Development Fund) to community members to start small business in ecotourism like homestay, guest house, restaurant, souvenir shop, bike rental, etc. Handholding and technical assistance for Enterprise development and management
- **Accommodation facility development:** Development of accommodation facility (like community owned and managed ecolodge, camping site, etc.)
- **Capacity building:** Identify specific areas of capacity building (in areas of ecotourism, hospitality, guest relations, cookery, culture, adventure activities, etc.) and organise training programs for community. This can be conducted by involving specialised institutions like Hotel management institutes, hotel chains, etc. Organize training programs on Interpretative guiding at regular intervals for basic and advanced levels
- **Benefit sharing mechanism:** Evolve a benefit sharing mechanism through community consultation
- **Procurement of equipment:** Procure equipment for identified activity (for eg; kayaks, boats, portable camping, etc.)
- **Promotion and marketing** (using both online and offline channels)

Selection of destinations:

The project envisages development of 4 ecotourism destinations during the project period, in which individual destinations will be developed every 2-years. The selection of destinations will be conducted through a scoping exercise. Maximum weightage should be given to destinations based on

its inherent strength for ecotourism owing to its natural and cultural heritage. In addition, to align ecotourism development with the overarching objectives of the project like Catchment area protection & Forest degradation, it is proposed to consider and weigh the following aspects also while making the final selection of destinations;

- Forest degradation status
- Catchment area protection
- High incidence of shifting cultivation
- Absence of ecotour programs and packages currently
- Potentials of promoting ecotourism based livelihoods

Based on preliminary assessments, destinations namely Gumti Wildlife Sanctuary, Dumbur backwaters, Chabimura, Jampui Hills and Rudrasagar Lake are found suitable for new ecotourism development. However, final selection can be done after an elaborate evaluation of these destinations along with other potential destinations.

Convergence:

In component 3 there are various areas of convergence. However, priority areas would be revision of agroforestry model, plantation of agroforestry, livelihood support in livestock rearing and fish farming. Hence convergence would be created with DOA, DOH, DOF and ARDD and the process would be initiated by a GO. From SCATFORM person in charge would be Additional Director (Monitoring & Evaluation) and Additional Director (Planning & Implementation).

For overall social and economic well being convergence with schemes like Pradhan Mantri Suraksha Bima Yojna (PMBSY) PM Jeevan Jyoti Bima Yojna and Atal Pension Yojna would be emphasized.

C3.7 Revolving Fund to JFMC/ EDC for small IGA

The SCATFORM will provide revolving fund to each JFMCs for the disbursement to SHGs formed under the JFMCs. The JFMC shall release the revolving fund to SHGs after signing MoU and approval of business plan.

C3.7.1 Eligibility for Availing Microfinance/Loan by SHG

For an SHG to qualify for a loan, it will need to demonstrate that it can operate in a financially sound manner. Before obtaining the loan, SHG members must contribute a small amount of money to their common account every month. The amount to be collected from the members should be fixed and agreed on by all members. The money collected should be lent out to each SHG member until all the members receive a loan. This cycle of saving and lending should be continued successfully for at least six months. The SHG members should carry out activities utilizing the loan they receive. The SHG will become eligible for receiving loans from its JFMC, only after it demonstrates that it can operate this cycle successfully.

C3.7.2 Loan Distribution to SHG and among Members

SHG as a group shall apply for loan to JFMC to implement IGA which is implemented by its members as group activity and not as individual activity. If IGA is implemented individually as individual activity by its members, in such case SHG shall prepare panel list of applicants and required amount and submit to JFMC for approval of the list and release of loan amount against each individual through SHG. SHG may also prepare a waiting list of eligible applicants in the event of shortage of funds at its disposal.

C3.7.3 Revolving Fund

In initial stage, performance including saving and attitude of the members shall be examined and after 6 months, the SHG can receive revolving fund of JFMC after successfully passing the rating which shall be done by the project to see whether SHG is ready/capable to use fund for IGA or not.

C3.7.4 Agreement/MoU for Availing Loan

SHG has to enter into an agreement with JFMC prior to receiving loan from JFMC. SHG shall follow rules and regulations decided by JFMC in terms of receiving loan from JFMC fund. The SHG represented by the President shall enter into MoU with the JFMC for execution of IGA. In the MoU/agreement, the exact nature and quantity of work shall be mentioned along with time/period of its execution and completion, and amount of the loan to be received from the JFMC for the work, repayment condition including interest rate etc.

C3.7.5 Utilization of Loan

SHGs must utilize the loan for initiating or boosting the IGA they have selected. The loan should not be used for consumption purposes. SHGs should invest the loan in its activities, generate profits, and return the principal and interest to JFMC revolving fund. On one hand, the principal will be utilized by a JFMC to provide loans to SHGs in the subsequent year onwards because the block grant is given only once from the Project to JFMCs on the other hand, the interest should be deposited into the VDF of their respective JFMC to be utilized for the benefit of the entire committee. SHG members who receive a loan will be prohibited from lending out this money to other individuals for the purpose of making profits.

C3.7.6 Microfinance from Other Institutions

SHGs shall be permitted to avail loan from other institutions. Project will encourage and facilitate linkages with financial institution to expand business. It is to be kept in mind that financial institutions (banks, microfinance organisations, cooperatives), have their own criteria of evaluation of SHGs for giving loan. Therefore, since beginning project shall form SHG with Structure/Office Bearers (president, secretary etc.), define functions of the Office Bearers, frame rules/regulation/bylaws (monthly meeting, fine, election/selection of Office Bearers, termination of membership, loan repayment rule) for the functioning of the SHGs, strengthen institution to build capacity, updating of records (meeting, saving, loan and its repayment etc.) in specific printed registers, fix membership fees/monthly saving amount by members, opening of bank account and updating of pass books, appropriate use of loan given by JFMC.

C3.7.7 Management of Loan and Refund Mechanism

A SHG is required to manage loan amount effectively and use in such a way that it can refund the loan amount within stipulated time. Following mechanisms are suggested for the purpose:

Loan management

Loan management is crucial for the sustainability of a SHG. Following mechanisms may be implemented to enable SHG to manage loan effectively in principle though guideline for TRLM shall be reviewed and incorporated to hand over their operation to TRLM after completion of the Project:

- i. SHGs having good record of management of group should be considered for loan.
- ii. SHG must select viable IGA and develop a clear plan for its implementation prior to release of loan amount. COs shall assist SHG in selection of IGA and implementation.
- iii. Periodical (preferably weekly) meeting of a SHG to be held where progress of the utilization of loan amount is discussed and reviewed. If there is any problem in proper utilization of money, CO will make effort to involve SHG in seeking timely solution.
- iv. SHG should keep account of income and expenditure with respect to the loan amount.

Loan refund

COs will ensure that loan amount given to a particular SHG be refunded within the specific period. Following mechanisms are suggested to achieve this purpose:

- i. COs will support SHG so that income is generated by SHG on regular basis;

- ii. CO will assist JFMC to fix loan repayment schedule for each loan prior to the release of loan to SHG

If a SHG fails to manage group effectively or unable to use loan amount, the CO shall make effort to strengthen SHG and build their capacity to make them capable to implement IGA. In case, a SHG become defunct or not able to use loan amount, JFMC will recover the loan amount from the SHG.

C3.7.8 Grading and Rating of JFMCs/SHGs for IGA Support

SCATFORM will introduce grading of JFMCs/SHGs based on criteria before developing business plan and releasing loan for IGA. The criteria shall be developed and JFMC/SHG evaluated for deciding whether the JFMC/SHGs formed is yet capable or not to undertake IGAs. Only those JFMC/SHGs which qualify will be given revolving fund. Unsuccessful JFMCs/SHGs shall be capacitated further for three to six months so that they can pass grading and avail revolving fund.

Rating is proposed to be done after six months of strengthening of SHGs. Those SHGs who will not qualify at first grading will be further strengthened and graded after six months of first grading. Grading will be done by two members of team comprised of Range Officer/ Block Officer and LC. Rating criteria shall be developed by PMU with assistance from PMC. Some of the indicative criteria are as follows:

- i. Membership Profile
- ii. Governance Issue
- iii. Meeting Frequency
- iv. Attendance in meeting
- v. Financial transaction in the group
- vi. Regularity of meeting
- vii. Maintenance of records

A business plan will include 1) justification of selecting activity, technical details (how will the IGA be implemented, what equipment or materials are required, technical specification), cost- benefit analysis, target, and schedule of the activities proposed, training need, interest rate and payment schedule of loan, financial arrangement from other sources if any, sustainability aspects and names of members undertaking IGA.

RMU level rating and grading shall be organized at RMU level. COs shall assist RMU in undertaking these activities in JFMCs.

SHGs will be identified and formed batch wise at least 3 SHGs per JFMC for skill training, loan for IGAs and marketing¹¹. Following format can be used by LCs and FFs to identify IGA.

Table: IGA Identification Format

Name of DMU	Name of SDMU :
Name of Block:	Name of RMU:
	Name of Forest Beat :
SHG Detail	JFMC/EDC Detail
Name of SHG:	Name of JFMC/EDC:
Name of Bank & Branch:	Name of Bank & Branch:
Saving Bank Account No:	Saving Bank Account No:
Name of SHG President:	Name of JFMC/EDC President:
Ph. No. of SHG President:	Ph. No. of JFMC/EDC President:
SHG Registered with (Organization):	Name of Member Secretary :

¹¹The Project provides revolving fund to maximum 3 SHGs from the project; however, JFMC can use surplus revolving fund to support other SHGs in addition to three over a period of time. Further, there might be a situation in a JFMC where only one or two are no SHG is interested in doing IGAs in a JFMC. In such case, the revolving fund can be allotted to another JFMC as per need.

Registration No. with Date:	Ph. No. of Member Secretary :
Name of IGA Identified (by SHG members):	
Reasons for Identifying Particular IGA (to be shared by SHG members)	
Reasons	Tick Answer as Yes or No
SHG members have required skills to develop product/or undertake IGA	Yes/No
SHG members have prior experience of making identified products/or implementing IGA	Yes/No
Raw materials are available locally	Yes/No
Facilities like place/land/space available	Yes/No
Natural conditions (soil, climate etc.) are suitable	Yes/No
It can be implemented along with other household activities	Yes/No
Local market exists	Yes/No
Potential market exists	Yes/No
SHG have prior experience of selling/marketing products	Yes/No
Possibility of convergence if any with other department/schemes/projects (describe in brief): SIPARD for training support and North East Rural Livelihood Project (NERLP) under Ministry of DoNER.	
Any other reason for identifying particular IGA (describe in brief):	

Component 4. Institutional Strengthening

I. Institutional Strengthening

C4.1 Department Mode

C4.1.1 Infrastructure and Mobility Enhancement

C4.1.1.1 Building Construction

Based on Assessment of Eligibility in Attachment 21, construction of following buildings would be undertaken by the Project. As durable life would exceed the project implementation period and it would be utilized for the general operation of TFD as well after completion of the Project, the State Government must cover 50% of the total cost, and the Project shall cover the remaining 50%. In such cases, TFD shall ensure the state share portion for the said purpose and inform the same to JICA for obtaining concurrence prior to initiation of construction. As for the location of building, see Attachment 21.

Table: Proposed Buildings to be constructed

No.	Proposed Interventions	Quantity
1	Expansion of transit accommodation of 12 field officials cum training centre under the Project at Khejur Bagan, Agartala: Eligible	1 building (12 units)
2	New construction of office Space for DMU Office Space for newly created District Forest Establishments: 50% eligible	4
3	New construction of office Space for SDMU: 50% eligible	7
4	New construction of office Space for RMU: 50% eligible	7
5	New construction of office Space for Beat Office with Hall: 50% eligible	56
6	FG Barrack at Forest Protection Units: 50% eligible	6

The construction of buildings shall be allocated in 3 batches from the 2nd to 4th Project Year to yearly increase the office space along with the increase of work activities of the Project administrative and field personnel. The tentative construction allocation schedule is described in the table below.

Table: Proposed allocation of building construction

Project Year (Batch)	Y2 (1 st Batch)	Y3 (2 nd Batch)	Y4 (3 rd Batch)
DMU Establishment	2	1	1
SDMU Establishment	2	3	2

RMU Establishment	3	2	2
Beat Office with working space for JFMC.	20	18	18
FG Barrack at Forest Protection Units	2	2	2

C4.1.1.2 Vehicle Procurement

At beat and district levels some vehicles (four and two wheelers) would be needed for efficient transport. At the same time existing vehicles need rigorous maintenance. Maintenance of vehicles procured on or before 2010 will require special attention while a few more vehicles and motor bikes will be procured for the field operations. Inventory of vehicles at PMU and field officers should be taken at the beginning of the project. Based on the required number of the vehicle and conditions of the existing vehicles at each office, decisions shall be taken by the Executive Body of the PMU on quantity and type of vehicle to be procured by the end of the first year of the project. Prior approval by the State government shall be obtained before the procurement. Maintenance of these vehicles will be covered by the project during its implementation by respective office to which the vehicles belong to. After the completion of the project, field offices will be responsible for the maintenance of the vehicles while those belonging to PMU will be handed over to TFD.

C4.1.2 Enhancement of GIS/ MIS facilities

C4.1.2.1 Support for strengthening GIS/ MIS

GIS and MIS play a key role to support the proposed project work for attaining various objectives such as spatial visualization, documentation of progress, and long-term impact assessment, and TFIPAP also supported the development of GIS and MIS. For example, MIS system starting from PMU to local levels of TFD was developed. At the same time, GIS lab was established at PMU, and some mapping works were completed using satellite imagery and GPS.

Although TFIPAP improved GIS and MIS environment, needs for further improvement and enhancement of technical capacity of PMU and other levels as well as human resource development considering long-term sustainability of the interventions were also identified. To efficiently introduce GIS and MIS technologies and enhance GIS and MIS facilities/capacities, existing GIS and MIS need to be strengthened particularly in (a) equipment, (b) satellite imagery, and (c) human resources.

a) Equipment

Infrastructure in GIS/RS and MIS at PMU is overall good, and data flow from JFMCs through RMU to PMU has been organized and currently functions. PCs, antivirus software, scanners, printers, multipurpose devices, and internet in PMU will be used in the proposed project, while UPS devices and LAN structure need to be discarded or replaced. For the GIS/RS part, GIS and RS software licenses will be upgraded by renewing maintenance contract. Satellite imagery will be used to detect changes by comparing them with newly procured recent satellite imagery. GPS will be used for ground truth surveys. GIS data and maps will be incorporated and standardized with other GIS data of TFD GIS Unit and managed within a new server. For the MIS part, the existing data flow from JFMCs through RMU to PMU will be upgraded, while PCs and internet at local offices need to be replaced.

Under these conditions, to further improve the capacity and meet specific needs of new project activities, the procurement of the following equipment will be proposed in SCATFORM. Table: illustrate situation analysis results regarding equipment in PMU.

Table: Equipment Procured in TFIPAP and Equipment Proposed to be Procured in SCATFORM

Item	Procured in TFIPAP	Proposed to be procured in SCATFORM
Satellite imagery	-Cartosat-1, Mono, (2009-10) 2.5m -Indian Remote Sensing Satellite (IRS 1D & P6), LISS III FCC (2000, 2002, 2004, 2006, 2008 & 2009) 23.5m	Recent and high resolution satellite imagery is required.

	-Resourcesat 2, LISS IV FCC (2013, 2014 & 2016) 5.8m	
Data	-Base data (State, District, Range, Village/Mouza, Block, Subdivision, PMU and DMU location, SWC sites, Beat, JFMC, Road, Waterbody (including rivers), Elevation, and Watershed)	Authenticity of data and unification of data within TFD need to be addressed. At the same time, thematic data for new project activities are required.
Map	-Land use and land cover map for the entire project site -Land use and land cover map for 112 JFMCs	Large scale maps for target beats are needed. Recent maps are also needed for a wider area.
Software	-ESRI ArcGIS 10.3 Advanced (1) -SuperMap 7C (2) -ERDAS Imagine 2015 (1)	The number of licenses needs to be increased. At the same time, additional toolsets designated or specific data processing and analysis are needed.
Hardware	Basic environment (Workstation (2), PC (28), Plotter, Scanner, Printer, Multi-purpose, CCTV, UPS, Gen set, and GPS (80))	The number of equipment needs to be increased.
Data Management	All data are saved in a portable hard disk drive.	Server is needed.
MIS	The system is in operation. The system still needs to be improved. For example, the system is maintained manually. Technical support is provided based on email, basic software such as MS Office package (word/excel), and mobile phones. Data transfer and privacy is not secured. Data is not updated in a timely manner.	Linkage with Government Broadband high-speed internet at local levels needs to be improved, ensuring stable internet connections. At the same time, in-house software packages for MIS need to be introduced. New dashboard system also needs to be developed for automatic MIS reporting. GIS data are also distributed through the Web.

b) Satellite Imagery

Satellite imagery can be utilized for many project activities. In SCATFORM, to conduct land cover/land use classification, multispectral satellite imagery are needed. To interpretate detailed land features including streams and roads, very high resolution optical satellite imagery are needed. To prepare contour maps and conduct watershed analysis, high resolution digital elevation model are required. Table: shows an example of Indian high-resolution satellite imagery available at the Indian Remote Sensing (IRS) satellite program, and considering the data availability and their conditions, the following Indian satellite imagery or foreign satellite imagery with equivalent specifications will be examined as target satellite imagery by PMU. In this regard, PMU will be responsible for the selection of satellite imagery as well as their procurement, and the end user license of the satellite imagery will be owned by PMU. Further, the first procurement needs to be scheduled at the beginning of the Preparatory Phase in 2019 because these data will be used in outsourced map preparation work. Other satellite imagery will be procured in multiple batches to monitor forest cover conditions periodically. With regard to the National Remote Sensing Center (NRSC), satellite imagery are obtained by advance payment only, and the time required for ordering satellite imagery can be usually varied from one day to a few days.

Table: Example of High-Resolution Satellite Imagery Specifications

Sensor	Spatial Resolution	Application example in SCATFORM	Indian Satellite Examples
Panchromatic/Pansharpend imagery	2.5m or similar	Visual interpretation of forest density for forest base map making, field survey planning, and digitalization of surface features such as road and narrow streams and roads and residential areas for Beat Forest Basic Plans Visual interpretation for Working Plans. Ideal observation period: Around the end of dry season from November to	CartoSat-2

		February	
Multi-band imagery	5 m or similar	Land use/land cover classification for Beat Forest Basic Plan and detection of forest cover changes using multiple datasets for monitoring. Visual interpretation for Working Plans. Ideal observation period: Around the end of dry season from November to February	LISS-4, LISS-3
Digital Elevation Model	2.5m or similar	Contour map (5m interval) making, slope analysis, and watershed analysis for Beat Forest Basic Plans.	CartoDEM

c) Human Resource

In TFIPAP, a total of four experts were involved in GIS and MIS development. For GIS, one in-house GIS analyst was involved in various tasks in GIS on site, and his main duties included providing GPS training to field implementation staff such as LCs and COs in RMU, beat officers, and field facilitators in JFMC, managing GIS data, and preparing maps at demand. For MIS, one in-house MIS expert, one private company in Tripura, and one consulting firm were involved in the system development. In the context of MIS operation, documentation assistants at RMU input data to MIS, and eight support staff in PMU checked and edited the data as necessary. PMU also functioned as a call centre to correspond to inquiries from field officers.

Although GIS and MIS developed in TFIPAP are still in operation, the study results showed that a lack of appropriate human resources needs to be particularly addressed. To further improve the existing GIS/MIS environment and effectively implement project activities, the establishment of new PMU is proposed (Figure:). In the proposed PMU, the Division Head is selected from TFD. Under the Division Head, four in-house experts in GIS, RS, and MIS fields are hired from outside of PMU. GIS/RS and MIS units are formed under directions of GIS/RS and MIS consultants of PMC. Under the experts, six Data Operators and field MIS staff are directly hired by the Project or transferred from TFD. In addition, some analysts/operators are hired from outsourcing mapping agencies because PMU's satellite imagery cannot be used shared with the outside agencies. This situation allows PMU to accumulate technique and knowledge regarding map making as well as communicate with mapping agencies more smoothly. At the same time, PMU cooperates with TFD including GIS Unit and Working Plan Division by providing trainings and technical support at demand. At the same time, data are also shared with PMU, particularly beat officers, and become available through the Web during their field work.

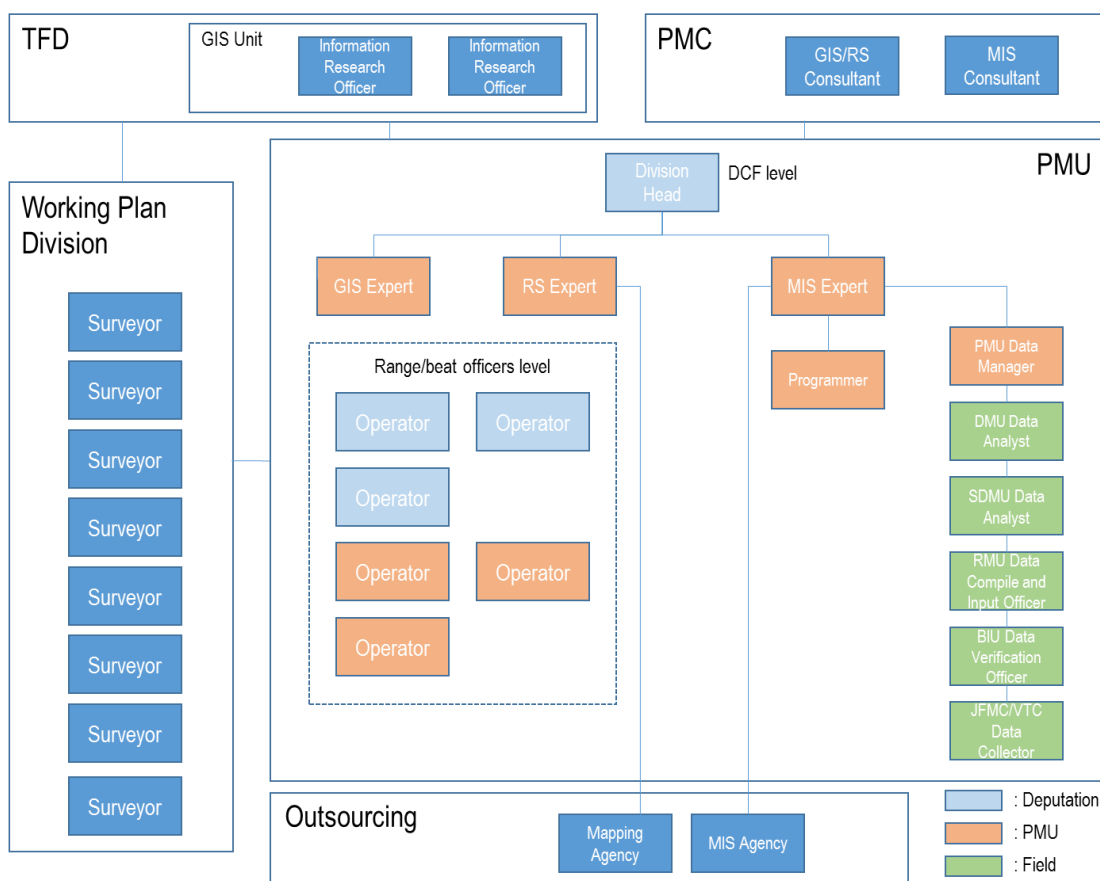


Figure: Proposed Organization Structure of GIS/MIS Unit

In PMU, experts and field officers have different roles and responsibilities. Table: summarizes their roles and responsibilities. Due to time constraints, brief roles and responsibilities for experts and field officers need to be prepared by the JICA study team in the Detailed Scope of Work. Many PMU and field officers are hired from outside of PMU, and three Data Operators are staffed from TFD. To increase speed and efficiency of proposed map making work and data policy of satellite imagery, technicians in hired mapping agency are hired as Data Operator of PMU.

Table: Expected Roles and Responsibilities of the Proposed PMU Staff

Position	Level	Expected Roles and Responsibilities
GIS Expert	PMU	<ul style="list-style-type: none"> • Conduct needs assessment on the GIS-based systems. • Assess available data (availability in geographical extent, frequency, etc.). • Supervise GIS/RS unit operators under direction of PMC in cooperation with GIS and MIS experts. • Plan and design outsourcing works for mapping agencies. • Manage mapping agencies to complete proposed map preparation on time. • Provide GIS training with GIS/RS unit operators periodically and Working Plan Division staff at demand. • Prepare GIS operation manuals. • Give technical advice to the Division Head and TFD for their project activities.
RS Expert	PMU	<ul style="list-style-type: none"> • Conduct needs assessment on the GIS-based systems. • Assess available data (availability in geographical extent, frequency, etc.). • Supervise GIS/RS unit operators under direction of PMC. • Plan and design outsourcing works for mapping agencies. • Manage mapping agencies to complete proposed map preparation on time. • Provide RS training to GIS/RS unit operators periodically. • Prepare RS operation manuals. • Give technical advice to the Division Head and TFD for their project activities.

MIS Expert	PMU	<ul style="list-style-type: none"> • Coordinate with the Software development agency to monitor the progress of outsourced work related to the development of MIS Forestry Department (web enabled software application). • Conduct roll out and implementation of the developed MIS software through PMU and other departments and daily activities and maintenance. • Coordinate with GIS/RS Unit (GIS Expert) in data/information integration with developed MIS. • Carry out daily activities in MIS, report generation etc. • Organize training and capacity building for field officers. • Assist and submit updated information to the Division Head in Management and supervision of the MIS-related activities. • Procure software development IT related equipment. • Coordinate with Forest officials other than PMU for utilization of MIS & GIS Units for various activities of the department.
Software Application Developer (Programmer)	PMU	<ul style="list-style-type: none"> • Report to the MIS expert in daily activities for update of the modules, reports by updating the developed software code. • Carry out daily activities from record update to report generation. • Carry out field visits to solve issues and smooth running of the system. • Assist the MIS Expert in maintenance & administration of MIS developed under the project, coordinate and monitor the smooth running of the system. • Coordinate with the software development agency responsible for its development and maintenance. • Write and edit codes.
Data Operator	PMU	<ul style="list-style-type: none"> • Prepare maps and conduct spatial analysis required for project activities. • Maintain/improve MIS system under direction of MIS expert and programmer.
Data Manager	PMU	<ul style="list-style-type: none"> • Maintain overall data coverage, quality for MIS data to ensure the relevance and usability of the systems and forestry data integrated to the platform. • Maintain and upgrade the database activities whenever required. • Assist MIS Expert and coordinate with GIS cell for the integration and verification of the data. • Maintain the quality of data received from the field offices. • Coordinate and monitor the data entry in MIS.
Data Analyst	DMU and SDMU	<ul style="list-style-type: none"> • Analysis of the data received from the field/departments. • Maintain quality of field level data. • Based on the findings, mechanisms for data verification should be developed. • Ensure that the data received from the field are properly entered into the system (validate and verify). • Follow up for pending or discrepancy of the data / information.
Data Compile and Input Officer	RMU	<ul style="list-style-type: none"> • Compile and input data to MIS.

C4.1.3 NTFP Production and Marketing

SCATFORM will support the following activities in order to make NTFP more profitable for forest communities.

- i. Revision, finalization, approval and gazette notification of NTFP policy of state through local, regional and national level consultation meetings and workshops.
- ii. Development of sustainable harvesting protocols for selected NTFPs based on research promotion of ex-situ and in-situ conservation, and models for benefit sharing mechanism, etc.
- iii. Publication of research papers, books, brochures, forest management interventions experiences, report of experiences of experimentation/impact, sustainable harvesting protocols brochures, newsletters, proceedings etc.
- iv. Market survey/discovery of fair price of NTFPs for collectors from forest community before the beginning of the collection season, its dissemination to collectors, and issuing tender for collection by traders from JFMCs on a fair price.
- v. Holding national workshops on issues related to NTFPs conservation, forest governance, NTFPs based livelihoods and presentation of NCE contribution in those areas
- vi. Exchange visits from and to different institutions for cross learning.

- vii. Development of training materials for organizing trainings for community, different level of State Forest Officers, IFS Officers and other forest officials from other states, NGOs, NTFP traders/suppliers/byers/manufacturers, artisans and others.
- viii. Organizing buyers and seller meetings, promotion of NTFP products exports, registration of NTFP-based units/enterprise, and participation in national and international market/fair
- ix. Monitoring of NTFP harvest, collection, processing, value addition, marketing and allied activities in the project areas.

C4.1.4 Gender Mainstreaming

Recognising roles of men and women differently and acknowledging their different contribution towards achieving project objectives are entry points for gender mainstreaming. Mainstreaming gender in the project means being sensitive to different needs of men and women, with an effort to reduce gender gaps and discriminations. To this end the project should have a sound gender analysis and should adopt strategies to mainstream gender, in such ways that gender needs are copiously addressed as well as documented. This is only possible when project staff have good understanding of gender mainstreaming and recognise, document and replicate good practises related to gender mainstreaming in course of various works of the project.

With these concepts in mind, the following items will be carried out in the project. The table below captures the main focuses of Gender Mainstreaming in TSMFP with broad monitoring indicators. M&E framework should consider integrating some of these Gender indicators. The broader indicative Gender Action plan is in Annex 3.

Table: Timeline for Gender mainstreaming related steps in detailed scope of work

SI No	Task	Level	Project Phase/Year	Concrete Steps	Person Responsible
1.	Adoption of Gender Action Plan (GAP) with measurable indicators	PMU	At inception (1 st year)	Finalisation and adoption of a GAP	Project Director
2	Allocation of adequate fund for Gender Action Plan	PMU	At inception (1 st year)	Budgetary allocation review and allotment of funds	Additional Director planning & Implementation
3	Dissemination of gender policy for Staff of TFD / Project	PMU	At inception (1 st year)	Formation /revision of Gender policy and distribution	
4	Having a gender focal person at PMU to supervise overall gender mainstreaming	PMU	At inception (1 st year)	Appointment	Regional & Sub-Regional Heads
5	Having Gender Coordinators at DMU/SDMU to implement overall gender mainstreaming activities	DMU/SDMU	At inception (1 st year)	Appointment	Gender Focal Person at PMU
6	Formulation of Project Gender Committee	PMU	At inception (1 st year)	Formation	Gender Coordinators at DMU/SDMU
7	Implementation of gender specific safeguards	PMU	At inception (1 st year)	Adoption and Implementation	
8	Incorporation of gender indicators in the M&E framework	PMU	1-2 year	Developing M&E framework with Gender indicators (at-least one per component)	
9	Development of appropriate gender training manuals	PMU & Other levels	1-2 nd year	Development	
10	Organisation of gender trainings for TFD staff and community leaders	All Levels	1-2 year	Preparing training calendar & Conducting trainings	
11	Engagement of community resource persons from both genders	JFMC	2-3 year	Appointment	

SI No	Task	Level	Project Phase/Year	Concrete Steps	Person Responsible
12	Organising a stock taking studies at regional/sub-regional levels (like base-line)	Community/DMU/SDMU	2 nd year	Commissioning a study, TOR	
13	Regular interactions with women groups at communities	Community	2 nd year till end	Engagement	
14	Collection of gender disaggregated data through MIS	All levels	2 nd year till end	Collection of data and integration with MIS	
15	Documentation & Publication on Gender, success stories	PMU	2 nd year till end	Selection & preparation	
16	Regular Gender assessment as part of social assessment	PMU	2 nd year onwards periodical	Developing Format for assessment & implementation	
17	Conduct of an impact study on gender	PMU	5 th year	Commissioning a study, TOR	

Table: Priority Gender Mainstreaming Work

Issues / Project Objectives	Actions to be taken	Monitoring Indicators	Responsibility
Women leadership development in community institutions	1. Women as JFMC Head 2. Increased effective participation of women 3. promote literacy of women	<ul style="list-style-type: none"> Number of women JFMC heads Number of issues raised by women (issues linked with women empowerment adopted as priority issues at JFMC) Percentage increase of literacy among female members of JFMC 	1. Additional Director Training 2. Gender Focal person PMU
Social Upliftment of women by reducing their work load	Alternative Source of fuel to be encouraged and facilitated	<ul style="list-style-type: none"> Number of households accessing Pradhan Mantri Ujjwala Yojana, Ministry of Petroleum and Natural Gas, Govt of India 	3. Gender Coordinators at DMU/SDMU
Economic Upliftment of Women through Project works	Ensure enough work for women and equal wages	<ul style="list-style-type: none"> Increased income of JFMC women Equal wages received by women 	
Research	1. Case studies on successful initiatives of	<ul style="list-style-type: none"> Number of cases documented and published 	4. Gender

/Documentation Visibility & recognition of Women's contribution	women 2. Felicitation of women leaders, successful women entrepreneurs, achievers	periodically (incorporated in project reports) • Annual meets taking place with a session dedicated to women	Committee
Gender Mainstreaming in TFD	1. Appointment of Gender Focal person 2. Appointment of Gender Coordinators 3. Formation of Gender Committee 4. Organising Gender Training for staff 5. Gender sensitive staff deployment at all levels 6. Clear Gender Indicators in M&E 7. Gender Impact study	• Gender Focal person/coordinators appointed with appropriate TOR • No. of meetings of Gender committee and decisions taken • Number of Gender training took place and participation • Component-wise Gender indicator in M&E Framework • Impact study commissioned with an appropriate TOR	

Training schedule: (please link it with training calendar under Capacity building. Gender trainings ideally will be in first and second years)

Scope of Impact Study: Impact study, to be conducted by third party, will review progress of Gender mainstreaming in TSFMP and would document outcomes of such initiatives, it would further put forward set of recommendations for any necessary course corrections or strategic fine-tuning

A gender focal person should be appointed, who will coordinate gender mainstreaming at all levels. Adequate gender specific safe guards would be in place enabling women to take effective part in all activities, starting from decision making to implementation and having equal access in benefit sharing. Gender trainings would further strengthen skills of staff and allow them to mainstream gender in various programmatic interventions, data collections and documentations. Impact study on gender will usher light on progress of gender mainstreaming in the project, thus providing opportunities to fine-tune strategies if needed. Regular monitoring of gender indicators and collection and analysis of gender disaggregated data would help in advancing the agenda of gender mainstreaming as part of institutional strengthening.

At local community level institutions, awareness among women leaders through regular interactions and sharing would be instrumental. Organising trainings for community members on gender (incorporating both men and women), creating exclusive space for community women to interact about their development priorities in local institutions and ensuring their effective participation in decision making (reserved seats for women as president/vice president of local institutions) would further strengthen this entire process.

C4.1.5 Enhancement of Environment and Social Considerations

The Project may not include any sub-projects requiring environmental clearance nor are any activities with major social impacts, however their certain potential impacts and risks may arise during the implementation of the Project. Therefore, the Environment and Social Management System Framework (ESMSF) and the Scheduled Tribe and Forest Dependents Plan Framework (STFDPF) has been prepared in conformity with the JICA Guidelines for Environmental and Social Considerations 2010 (JICA Guidelines) and the World Bank Operational Policy 4.10 (OP4.10). ESMSF/STFDPF shall be the primary reference document for the environmental and social safeguard and thus shall be applied for the over all stage of the Project.

a) Definition of Sub-Project

In ESMSF/STFDPF, the word of sub-project is used to represent a bunch of the activities of the Project pursuant to the JICA Guidelines. Screening and categorisation shall be carried out each sub-project and the result shall be submitted to JICA. The definitions of the sub-projects are shown below;

- 1) Beat Action Plan: Beat action plan will be developed by each range and include descriptions of activities for department mode, JFM mode, Joint Liability Groups, and other processing activities. Thus, beat action plan is defined as a document for sub-project including department mode and other activities.
- 2) Micro Plan: Micro plan will be developing by JFMC and including detail activities of JFM mode. Thus, micro plan is defined as a document for sub-project of JFM mode. Beat action plan may also include the activities defined in micro plan however, micro plan may describe detail information on the activities before beat action plan is prepared.
- 3) Others: Definition of sub-project also include other activities which is not described in detail in the beat action plan and the micro plan such as development of processing facilities because they are incorporated after the beat action plan or the micro plan are approved.

b) Overview of the ESMSF/STFDPF Procedure

The general procedure of the ESMSF/STFDPF is summarised in the table below.

Table: Overview of ESMSF/STFDPF Procedures

	Project Stage	Safeguard Activity	Suggested Guidance to be Developed	Developer of Guidance
1	Target area and JFMC selection, and preliminary consultation	<ul style="list-style-type: none"> - Beneficiary Selection - Explanation of the Project overview - Information Disclosure and Free Prior Informed Consultation - Establishment of broad community support 	<ul style="list-style-type: none"> - JFMC Management Manual - Guidance Note to ensure social and environmental safeguard. - Selection criteria reflecting the social-environmental safe guard perspective - Selection to be done in a public meeting of people's institution placed by the Project (e.g., JFMC/ EDC) 	- PMU will develop required guidance documents with assistances of the assigned environmental and social officers in PMU and the environmental and social consideration expert of the Project Management Consultant (PMC)
2	Baseline Surveys	<ul style="list-style-type: none"> - Social Assessment - Biodiversity Assessment (at construction site) 	<ul style="list-style-type: none"> - Social Assessment Plan - Biodiversity Assessment Plan 	
3	Sub-project Planning	<ul style="list-style-type: none"> - Process of micro plans to be participatory to reflect on the voices of the community members - Screening and selection of the activities with reference to the subproject exclusion criteria - Subproject categorisation as per the JICA Guidelines. - Participatory environmental and social assessment for confirmation of the screening results and finalization of the activities to be undertaken by JFMCs/EDCs 	<ul style="list-style-type: none"> - Micro Planning Manual - Participatory Environmental and Social Assessment (ESA) Plan (if necessary) - Screening criteria 	
4	Approval of sub-project	<ul style="list-style-type: none"> - Activities in sub-projects shall be reviewed by RMU from the viewpoints of environmental and social safeguard and submit to SDMU for review and DMU for approval. 	<ul style="list-style-type: none"> - Screening criteria - Guidance Note to ensure social and environmental safeguard 	
5	Sub-project Implementation	<ul style="list-style-type: none"> - Community participation in project activities 	<ul style="list-style-type: none"> - Guidance Note to ensure social and environmental safeguard. 	
6	Monitoring and Reporting	<ul style="list-style-type: none"> - Through participatory M&E mechanism the impact of the project activities will be monitored by the executing agency 	<ul style="list-style-type: none"> - Guidance Note to ensure social and environmental safeguard. - Monitoring Sheet 	
7	Grievance Procedures	<ul style="list-style-type: none"> - Through the project's institutional structure 	<ul style="list-style-type: none"> - Institutional responsibilities for addressing grievances 	

c) Institutional Framework for ESMSF/STFDPF

Overall coordination and support for ESMSF/STFDPF will be provided through the PMU and information related ESMSF/STFDPF will be centrally managed by the PMU. PMU will be responsible to report to concerned departments in the State Government as well as to JICA in relation to environmental and social consideration.

Within the Project, the Project Director (PD) will serve as Environmental and Social Safeguard Director and hold central responsibility for ensuring ESMSF in the Project. Additional Project Director will serve as Environmental and Social Safeguard Manager to conduct overall management of ESMSF/STFDPF at the PMU level.

Further, selected DMU Chiefs will serve as Environmental and Social Safeguard DMU Chief for the project implementation at DMU level. Selected SDMU Chiefs and RMU Chiefs will also serve as

Environmental and Social Safeguard SDMU/RMU Chief for the project implementation at SDMU/RMU level to provide hands-on assistance to members of JFMC/EDC who will be the Environmental and Social Safeguard Focal Person.

In addition, an Environmental and Social Consideration Expert is planned to be deployed under the Project Management Consultant to assist PMU on environmental and social consideration issues of the Project.

Table: Individual Role and Responsibility for ESMSF

Organization	Position	For ESMSF	Role and Responsibility
PMU	Project Director	Environmental and Social Safeguard Director	<ul style="list-style-type: none"> - Overall coordination and promotion of ESMSF compliance - Overall responsible for ensuring ESMSF in the Project. - Responsible to centrally manage information related to ESMSF. - Responsible to report to concerned departments in the State Government as well as to JICA in relation to environmental and social consideration
PMU	Additional Project Director	Environmental and Social Safeguard Manager	<ul style="list-style-type: none"> - Responsible for implementation of ESMSF for their activities in each designated work field. - Responsible for monitoring all the field level activities relating ESMSF. - Responsible for examination of safeguards compliance.
DMU	DMU Chief	Environmental and Social Safeguard DMU Chief	<ul style="list-style-type: none"> - Responsible for conducting overall management of ESMSF monitoring and ESMSF related information within DMU. - Responsible for regular collection of ESMSF information as a part of MIS format.
SDMU	SDMU Chief	Environmental and Social Safeguard SDMU Chief	<ul style="list-style-type: none"> - Responsible for regular collection of ESMSF information as a part of MIS format at SDMU level - Providing hands-on assistance to SHGs, JFMCs/EDCs and Working Groups regarding ESMSF. - Closely communicating with the Environmental and Social Safeguard Focal Person for timely action if necessary.
RMU	RMU Chief	Environmental and Social Safeguard RMU Chief	<ul style="list-style-type: none"> - Responsible for regular collection of ESMSF information as a part of MIS format at RMU level - Providing hands-on assistance to SHGs, JFMCs/EDCs and Working Groups regarding ESMSF. - Closely communicating with the Environmental and Social Safeguard Focal Person for timely action if necessary.
JFMS/EDC/SHG	JFMC/EDC/SHG	Environmental and Social Safeguard Focal Person	<ul style="list-style-type: none"> - Support the Project for compliance of ESMSF from the perspective of PRI. - Encourage beneficiaries to participate in activities relating ESMSF.

d) Selection and Screening of Sub-Projects

Sub-projects are selected based on the priority needs identified in the micro plans, beat action plans or other plans. Specific sub-projects will be selected on the basis of community preferences. However, certain exclusion criteria are required to ensure that the Project does not include sub-projects with potentially significant adverse environmental impacts such as EIA required projects (i.e., No Category 'A' or 'B' projects as per Indian EPA (1986) and the EIA Notification (2006)).

Sub-project selection and screening will be firstly carried out by JFMC/EDC for the micro plan and Range officers for the beat action plan. Each activity in the sub-project shall be screened and then the highest category among the activities will be the category of the sub-project. For example, if the

infrastructure development activity falls into category B while other activities fall into category C, the sub-project shall be categorized as B. Then, the screening results are submitted to DMU.

The sub-project categorisation as per the JICA Guideline and finalisation of the exclusion criteria will be conducted by PMU prior to the commencement of the Project or at the early stage of the preparatory work. The draft of the exclusion criteria is shown in the table below.

Table: Subproject Exclusion Criteria

Component	Exclusion Criteria
1. Overall	<ul style="list-style-type: none"> - Sub-projects which involve diversion of forest land - Sub-projects that involve acquisition of private land - Sub-projects that cannot demonstrate the broad community support - Sub-projects likely to have major adverse impacts on the environment - Sub-projects which will fall into “Category A” as per the JICA Guideline - Sub-projects which will fall into “Category A” as per the EIA Notification, 2006
2. Forest and Natural Environment	<ul style="list-style-type: none"> - Sub-projects to be conducted inside protected areas and will not contribute to environmental protection/ conservation of the selected protected areas. - Sub-projects which are not in accordance with principle of sustainable forest management including biodiversity conservation - Sub-projects that substantially alter basic composition of forest, especially natural forest. - Sub-projects likely to cause damage to wildlife and their habitats - Sub-projects which involve felling of trees on Reserved Forest or PA unless ancillary to conservation and management of forests and wildlife defined in the working plan (e.g. fire breaks, thinning etc) - Sub-projects involving the collection, processing and sale of NTFP species listed under CITES, India’s Red List of threatened species of fauna and flora or scheduled under the Wildlife Act (1972) - Sub-projects involving the use of fertilizers and pesticides banned by WHO (Classes IA, IB and II)
3. Social Environment	<ul style="list-style-type: none"> - Sub-projects that involve child labour - Sub-projects or activities which could lead to the exploitation of women - Sub-projects which involve acquisition of private land and/or resettlement - Activities that could cause damage to places of religious importance, historical monuments or cultural properties

Though sub-projects which fall into the “Category A” as per the JICA Guideline explained in Attachment 13 are not anticipated in the Project, following scale of sub-projects are basically regarded as the “Category A” and “Category B”. However, screening criteria might be changed based on its location and social situation. Examples of the screening criteria in each category are as shown below;

Category A

- Conversion or felling more than 100 ha of forest
- Construction of embankments/dams with water reservoir area more than 100 ha
- Development of more than 100 ha agricultural area
- Large-scale involuntary resettlement and land acquisition (more than 100 persons)

Category B

- Construction of embankments/dams with water reservoir area more than 10 ha
- Development of more than 50 ha agricultural area
- Development of infrastructure or building where endangered species listed in Wildlife Act (1972) or their habitat are existed
- Building more than 20,000 square meters.
- Small-scale involuntary resettlement and land acquisition (more than 1 person)
- Other activities which fall into Category B in EIA Notification (2006)

Example of the endangered species listed Schedule IV (Plant) of Wildlife Act (1972) is shown below.

1 Beddome's cycad (<i>Cycas beddomei</i>)	4 Ladies slipper orchids (<i>Paphiopedilum</i> spp.)
2 Blue vanda (<i>Vanda soerolec</i>)	5 Pitcher plant (<i>Nepenthes khasiana</i>)
3 Kuth (<i>Saussurea lappa</i>)	6 Red vanda (<i>Ranantthera inschootiana</i>)

Category C

JICA Guidelines stipulates that “Proposed projects are classified as Category C if they are likely to have minimal or little adverse impact on the environment and society.”

e) Approval of Sub-Projects and Reporting

Screening results from JFMC/EDC or RMU shall be reviewed by RMU or SDMU from the viewpoints of environmental and social safeguard and then submitted to DMU for approval. DMU officers shall final review the screening results and make a decision for approval.

During the review and approval processes, related organizations shall also take carefully considerations for above mentioned environmental and social safeguarded policy.

In case subprojects which fall into the “Category B” as per the JICA Guideline are identified during the above “Selection and Screening” process and adverse environmental/ social impacts are anticipated from such sub-projects, DMU shall report to JICA through PMU at the timely manner and preparation of the Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) and their implementation will be required.

If the sub-project falls into category C, DMU shall submit the screening result to JICA through PMU quarterly together with Project Status Report (PSR) to be prepared for the overall Project

f) Capacity Development for ESMSF/STFDPF Implementation

Certain specialized knowledge and skills will be required at different levels for screening and assessing environmental and social impacts as well as implementing and monitoring safeguards measures.

The table below describes indicative key capacity development requirements for implementing the ESMSF/STFDPF measures, steps and procedures. A detailed training plan for environmental and social safeguard will be developed by PMU with the support by the environmental and social specialists of PMC.

Table: Capacity Development Plan for Environmental and Social Safeguards

Module Name	Theme/Topic	Key Participant	Schedule
Management/ Administrative Level	<ul style="list-style-type: none"> - JICA's safeguard policy - Basic introductory concept of safeguard - ESMSF/STFDPF steps and procedures to be applied in the Project - Free and prior informed consent (FPIC) - Monitoring and Evaluation 	- PMU officers / DMU/SDMU/RMU chief	- One time at the preparatory phase (total one batch)
Field/ Operational Level	<ul style="list-style-type: none"> - Basic introductory concept of safeguard - ESMSF/STFDPF steps and procedures to be applied in the 	<ul style="list-style-type: none"> - Representatives from JFMCs and EDCs - Other representative from Village Council and Gram 	- One time for each district at the preparatory phase (total 7

Module Name	Theme/Topic	Key Participant	Schedule
	Project - Community consultation processes - Free and prior informed consent (FPIC) - Monitoring and evaluation	Panchayat (if necessary)	batches)

C4.1.6 Capacity Development for Forest Department

The Project will provide opportunities for extensive training programmes, exposure trips and coaching to project staff and other stakeholders to equip new knowledge, skills and attitude required for proper implementation and to ensure the sustainability of project intervention. The Project will not only emphasize classroom-type training but also on-the-job training. The Project plans to mobilise external experts and resource persons to be involved in this capacity building process.

C4.1.6.1 Trainings

a) Training Plan Development - National

Project will create scope for a dedicated support for development of a comprehensive training plan for the entire project. A Training Master Plan will be developed after conducting detail Training Need Assessment (TNA) by the PMC Capacity and Institutional Development Expert and which will be updated annually for National and Overseas trainings. The Training Master Plan will also include the name of participants who have been selected for the training. For the selection of participants, a filter process must be designed to ensure that officials with at least two years of service remaining will be selected. Training programme are designed to empower the targeted participants and also enhance their skills in undertaking project work. In one hand Prescribed training programme like Project Orientation, JFMC/EDC Management, Monitoring and Evaluation, Gender Development and Organisational behaviour will equip the participants with necessary soft skill to undertake the project activities, also in other hand, training programme on SHG formation and Nurturing, Training on livelihood generation, and hands on training in Biodiversity management, Nursery raising and IGA related training will help the participants to gain hands on technical knowhow and also create an in-house knowledge base for sustenance of the project. To cover maximum number of participants under the training programme, several trainings were proposed to be conducted in “Training of Trainers” (ToT) mode which will help PMU to have wider access to training coverage and resource.

b) Training Plan Development - Overseas

To address the importance of sustainability and effectiveness of project implementation, the project lays strong emphasis on orientation, training, study tours and exposure visits of staff members of PMU, DMU and RMU level in order to help them to understand the project and equip them to manage and implement the same appropriately in the line with Over all Implementation Plan (OIP), Guidelines and Manuals. Objective of the overseas exposure visit is to get exposure to the latest technological and management interventions in the field of management of forest, Biodiversity Conservation and Ecotourism. The participants will see the effects of those new technologies, interventions and concepts for management of common property resources in participatory manner for high productivity on a sustainable basis. It is expected that such International Exposure Training will help Project Personnel to coordinate the technical and social consideration, work towards sustainable management and to use improved new technologies and concepts for betterment of forest dependent communities. Concept like SATOYOMA and SABO which is very popular in Japan will help participants to learn and experienced Landscape based agriculture and Forest Mosaic System and interaction process of different components which is very similar to the context of Tripura.

c) Training: Skill Development, Managerial & Gender***PMU/ DMU/SDMU***

A broad list of training topic has been proposed based on a rapid TNA done by the study team. The training programme for PMU/DMU will focus on Project orientation, Project Management including M&E, Forest Technologies, Organization Behaviour (OB), Gender sensitization and communication, GIS etc. to equip them with necessary skills. For conducting those training different institute of National repute like NIRD Hyderabad, IBRAD Kolkata, IIRS Dehradun XISS Ranchi can be contacted.

RMU

The RMU unit which comprises of Range Officers, Beat Officers, Local Coordinator, Community Organizer and Field Facilitator is an important unit for project implementation. To ensure capacity development of targeted officials (RO/BO) and support staffs (LC/CO/FF) total 10 different topics of training have been proposed which will ensure their technical and well as Ministerial and soft skill development. To conduct the training for RMU officials Institute like SIPRD Tripura, ICFAI University and independent subject matter expert can be contracted.

d) Refresher Trainings***PMU/ DMU***

Project has also created refresher trainings for PMU /DMU officials to review reinforce and upgrade knowledge. PMU and DMU officials will undergo refresher trainings on topics like Project Management, Gender sensitization and Forest technologies in different batches.

RMU

Refresher training for RMU staffs (Forest Department and Support Staffs) will cover topics like JFMC Management, GIS, Microplanning to ensure upgradation of knowledge and skills.

C4.1.6.2 Exposure Visits**a) National/ Outside State**

Both National and International Trips under exposure visit would be conducted under the Project to help the officials to get familiarized with the best practices and new development in the field of Sustainable Forest Management practices.

National Exposure trips are planned go states like West Bengal to see the best example of community participation in Natural Resource Management, States like Odisha and Madhya Pradesh will help the participants to understand best practices in Livelihood Generation, formation and functioning of SHG consortium application of MIS in Biodiversity Management etc.

PMU/ DMU

Exposure visit to states like West Bengal, Rajasthan, Madhya Pradesh can be organized for PMU /DMU officials to experience how projects of similar nature are being implemented and also to learn best practices and technological advancement from each states.

RMU

Exposure visit for RMU level officials and support staff can be organized in the state of Odisha, West Bengal, Tamil Nadu, Sikkim to get exposure of how community is being involved in sustainable

management of Forest along with technological advancement in the field of forestry and convergence of other programme along with Forestry project for enhancing Livelihood opportunities.

b) Overseas

The objective of the visit is to get exposure to the latest technological and management interventions in the field of Management of forest, Biodiversity Conservation and Ecotourism. The participants will see the use of new technologies, interventions and concepts for management of common property resources in participatory manner for high productivity on a sustainable basis.

It is expected that such International Exposure Training will help Project Personnel to coordinate the technical and social consideration, work towards sustainable management and to use improved new technologies and concepts for betterment of forest dependent communities. It will also help in acquiring new knowledge and skill up gradation.

Three Countries are proposed to organize overseas trainings: Tour to Japan, Thailand and Philippines can be organized to understand the recent development in the field of Sustainable Forest Management, Biodiversity Conservation and management of national parks.

For understanding the development and implementation of Eco Tourism trip to Malaysia can also be organized.

C4.1.7 Forest Research

SCATFORM will prioritize the following reserach.

1. QPM production of bamboo, cane, and NTFP species including medicinal plants.

These species shall directly contribute to catchment protection and livelihood improvement of forest dwellers. Demand for QPM of bamboo is still high and that of cane is expected to be high in the near future since these species will be used for establishing filter strip and providing materials for craft and furniture making. Propagation research on Cane using cane germplasm collected from Andaman island is proposed. The research can be carried out by two steps: 1), the cane germplasm cultivation at Amandanagar Research Station located 13 km from Agrtala city center, 2) based on the research results, cultivation of the germplasm at experimental plots in at least 3 distiricts in order to exmine adaptability of the germplasms at different ecogeographic conditions in the state.

2. Identification of suitable tree species for silvi-pastoral plantations

This model is a new in Tripura; therefore, the data needs to be accumulated.

3. Mixed plantation combined with teak

Although TFD has intention of converting mono culture teak plantations to mixed plantation, no mixed plantation with teak were successful.

4. Research on NTFPs inventory, productivity and availability.

Research on growth in bamboo species with reference to clone collected from specific areas (three years)

Research on medicinal plants and growth, productivity under different conditions for high value timber species plantation (agar, rose wood plantation, maharani etc.) (three years)

Study on economic contribution of NTFPs to village economy, forest governance,

forest/NTFP certification and other relevant issues. (three years)

5. Technology transfer to high tech nursery (e.g. after the third year onwards in case of bamboo).

6. Impact assessment and evaluation of different types of plantation (e.g. cane etc.),

It takes 2 years to conduct a research on propagation usually, thus, this type of research will be conducted two cycles during the implementation stage. Regarding research to identify tree species suitable for silviculture or association with teak, it takes 5 – 6 years. Thus, this type of research will be conducted one cycle during the implementation phase.

Forest Research Division has key responsibility for making research plans and conducting researches including data analysis and reporting. Since human resource of Forest Research Division is limited (there is only one research associate in the division), Two research officers and two research assistants shall be recruited by TFD. In case of field experiments, Range Officer will support to establish and manage experimental plots and collect data following guidance provided by Forest Research Division. Data analysis will be made by the research associate of Forest Research Division.

It shall seek opportunities to conduct some researches in collaboration with relevant research institutes such as ICAR and FRI, IFGTB, IFP, ARCBR, and CFLE to conduct research effectively and efficiently.

Outcomes of the research shall be shared with JFMCs through DMU/RMU focusing the project target areas. Results of the research also will be disseminated to other stakeholders in and out the project target areas through publications or presentations at forums.

C4.2 JFM Mode

C4.2.1 Infrastructure and Mobility Enhancement

C4.2.1.1 Building Construction

a) Multi Utility Centre

Infrastructure at each JFMC level is very crucial to develop suitable working environments for community based organizations. JFMCs, SHGs and JLGs who will be formed as community based organizations in each JFMC requires suitable place/facilities for conducting meeting, capacity building programs, awareness activities, records keeping, storage of raw NTFPs and its primary grading/value addition etc.

TFIPAP had constructed Village Training Centre at JFMC level and Mini-CCFCs for the cluster of JFMCs at places which was very useful and productive asset for developing capacity of community organizations and supporting livelihood. Therefore SCATFORM shall construct suitable common infrastructure/building in each JFMC which will function as Multi Utility Centres. These infrastructures shall be managed and used by community.

Construction which shall be implemented as EPA shall start after the formation and establishment of PMU/DMU/SDMU/RMU and selection of JFMC and finish within the six months from the start date.

JFMC shall ensure that infrastructures are maintained and used properly for the productive purposes.

A monthly monitoring system at JFMC level shall also be introduced by the Project for monitoring the JFM based activities including status of infrastructure.

Transparency board will be placed at the MUC to ensure the accountability of JFMC.

C4.2.2 Capacity Development of Community Institutions**C4.2.2.1 Trainings****a) Training: Skill Development, Managerial & Gender*****JFMC/ EDC Members***

JFMC and EDC will be the primary project implementing bodies at the village level and will be provided training to realize effective implementation of project works and Sustainable Natural Resource Management. Provision has been created for JFMC/EDC members to be trained on different topics for effective management of their institution. The training topics proposed includes Micro plan preparation, JFMC/EDC Management (Basic and Advance course), Sustainable harvesting and marketing of NTFPs and on Ecotourism. Training for JFMC/ EDC members can be organized in TOT mode and the master trainer to be developed on the above topics by some institute of repute like SIPRD or IBRAD or any other institute.

SHG Members

SHG members will be trained on topics like Group formation and internal savings, development of Business Plan and IGA related hands on Trainings. Different Government departments like fishery, Animal Husbandry, Tripura State Bamboo Mission are to be involved to conduct IGA specific trainings. Special emphasis will be given for identification of IGA activities based on feasibility study and keeping marketing opportunities in mind. After selection of IGA activities SHGs will undergo training for both technical skill development and also soft skill like business plan development in phases.

b) Refresher Trainings***JFMC/ EDC Members***

Provision for refresher training for JFMC and EDC members will give opportunity to upgrade their skills and knowledge. A number of training, which includes JFMC EDC Management, Ecotourism, and Sustainable harvesting of NTFP has been proposed under the project. Special attention to be provided to cover all the proposed 400 JFMC and 50 EDCs under the project in TOT mode.

SHG Members

Refresher trainings for SHG members to be conducted regularly to cover office bearers of all the 1350 SHGs to be formed under this project.

C4.2.2.2 Exposure Visits**a) National/ Outside State**

Exposure visit for National /outside state will be organize to give them opportunity to observe, learn and acquire new knowledge and witness the best practices. Tour to states like Orissa, West Bengal Chhattisgarh can be organized where participants will learn about community participation in SFM, NTFP processing, running of successful IGAs and functioning of federation / consortium of SHGs for IGA. Exclusive tour to Sikkim can be organized to give them exposure on best practices adopted in the field of Ecotourism by the community.

b) Within State - Cross learning

Exposure trip within the state will also help the participants in cross learning, JFMC/EDC/SHGs can be taken to nearby divisions to get exposed to witness innovative initiatives taken up by the community in the field of Forest Protection and Management, NTFP harvesting and processing or Ecotourism.

Convergence under institutional strengthening will have a focus on empowering women. A key emphasis would be on convergence with Pradhan Mantri Ujjwala Yojana, Ministry of Petroleum and Natural Gas, Govt of India. Additional Director Training and PMU Gender focal person will coordinate the convergence.

II. Project Management

C4.3 Department Mode

C4.3.1 Preparatory Activity for Project Implementation

C4.3.1.1 Institutional Set-up and Procurement

Institutional arrangement for the SCATFORM is described in Attachment 1.

a) Procurement of PMC

The project will procure Project Management Consultant (PMC) that is to provide technical support to the project components through international bidding for which EoI and subsequent RFP will be published in newspaper and PMU/TFD website as per guidelines prescribed by JICA. The duration of the consulting services is planned for 5 years. The details of PMC and its services is explained in Component 7.

C4.3.1.2 Map preparation

In TFIPAP, two types of land cover and land use maps were prepared: (1) 1:50,000 scale land use/land cover map for the entire project area for identification of degraded forest to form JFMC and (2) 1:5,000 scale land use/land cover map for initial 112 JFMCs for the development of microplans. Besides the above-mentioned maps, in order to initiate proposed new project activities including the preparation of BFBP for selected beats and mandatory work of TFD in a timely manner, SCATFORM will utilize existing map data and also newly prepare the several map data using satellite imagery procured at the beginning of the Preparatory Phase.

Table below shows required map data by output map. Map data shown in red are prepared by hired mapping agency. Map data shown in green are newly generated by PMU using procured satellite imagery. Map data shown in blue are prepared by PMU based on data collected by field officers. Map data shown in black are outputs of TFIPAP, and these existing data are reused. At the same time, these data layers are prepared by different time period. For Batch 1, the required data are prepared by March 2019, while those required for Batch 2 are prepared by March 2020.

Table: Map Data to be Prepared

Outputs	Working Plan		Beat Forest Basic Plan	Microplans
Scale	District / Range		Beat	JFMC
Map Scale (Tentative)	1:50,000 / 1:12,500		1:25,000	1:12,500
Data Layers	For existing plans	For future plans	<ul style="list-style-type: none"> • Forest cover • Roads • Rivers • Residential areas • Contours • Slope • Administrative boundaries • Legal forest boundaries • JFMC (Phase 1) • Check dams (Phase 1) • Micro watershed (Phase 1) • Soil erosion status • Public facilities • Existing JFMC 	<ul style="list-style-type: none"> • Forest cover • Roads • Rivers • Contours • Slope • Legal forest boundaries • Check dams (Phase 1) • Micro watershed (Phase 1) • Vegetation types • Public facilities
	<ul style="list-style-type: none"> • Rivers • Roads • Administrative boundaries • Legal forest boundaries • Compartment boundaries • Block boundaries 	<ul style="list-style-type: none"> • Rivers • Roads • Administrative boundaries • Legal forest boundaries • Compartment boundaries • Vegetation types • RoFR lands • Regrouped villages • Existing JFMC 		
	<p>Red: Outsourcing</p> <p>Green: Newly prepared by PMU</p> <p>Blue: Prepared by RMU and BO (To be determined)</p>			
Deadline	N/a	March 2023	1 Batch (27): March 2019 2 Batch (108): March 2020	1 Batch (27): March 2019 2 Batch (108): March 2020

For the implementation of project activities, these maps need to be completed by the dates specified in the above table. Due to time constraints, PMU may consider outsourcing the above map making work to specialized mapping agencies. For this, the following four points can be considered. First, it is recommended that one or the minimum number of mapping agencies will be hired. This will make it possible for PMU to maintain technical consistencies between maps. Second, it is needed that some Data Operators of the hired mapping agencies will be temporarily located within PMU during the contract period. This will allow PMU to learn GIS and RS knowledge and techniques from professionals through actual map making work. At the same time, because procured satellite imagery cannot be given to hired agency as a rule, data analysis using the satellite imagery need to be conducted inside PMU. This will also enable hired agencies for avoiding reworking by timely data/information exchange. Third, to improve the quality of map products, field data need to be collected by ground truth surveys, and this work is also included in the above map making work. For this, it is desired to involve local community members as well as field officers in field data collection. Lastly, PMU's GIS/RS Unit will be responsible for procurement of satellite imagery and quality checks of maps delivered from the hired mapping agencies.

C4.3.1.3 Batch-wise Approach

The implementation phase shall be divided into three batches. Each batch has four-year period. In total already selected 135 territorial Beats, they shall be grouped into three batches considering actual situation of forest degradation, status of soil erosion and poverty status, and RoFR land status.

Table: Target Output by Beat (Year) and JFMC/EDC (Batch)

Beat Level Planning	Year 1	Year 2		Total
Beat Forest Basic Plan	7 (Pilot)+20	108		135
Schedule	2018.11-2019.6	2019.7-2020.2		
JFMC/EDC Level Planning	Batch 1	Batch 2	Batch 3	Total
Micro plan JFMC	106	211	106	423
Micro plan EDC	13	14		27
Schedule	2019.7-12	2020.4-9		

C4.3.1.4 Preparation of Beat Forest Basic Plan (BFBP)

SCATFORM involves many activities in three major fields such as sustainable forest management, soil and moisture conservation, and livelihood and intends to implement activities by beat, which is the minimum administrative unit of forest management in Tripura. To maximize effects of each activity and achieve project objectives efficiently, it is important to strategically design and organize these activities in terms of contents, function, and location. For this, Beat Forest Basic Plan (BFBP) will be prepared to visualize an overall picture of these activities with their potential sites and implementation mode. For technical detail, see Annex 4.

To examine this plan in detail, key features of BFBP are discussed focusing on (a) Objective, (b) Contents, (c) Workflow, (d) Methods, and (e) Action taken after the preparation of BFBP.

a) Objective

BFBP aims at identifying potential sites and contents of activities implemented in target beats selected as a result of land potential assessment from the viewpoint of catchment protection.

b) Contents

BFBP consists of three sections: (1) Beat profiling, (2) Assessment of project priority areas (PPAs), important areas from the viewpoint of catchment protection, and (3) Beat level planning.

1. Beat Profiling

To organize information about target beats, beat profiles are prepared. Beat profiles mainly contain general information, forest land conditions, and socioeconomic conditions.

1.1 General information

To begin, general information about target beats are collected and organized. In the context of BFBP, general information can include:

- Administrative information: names of district, sub-division, range, beat, panchayat, and village.
- Demographic information: the number of households by village or panchayat.

1.2 Forest land conditions

The current conditions of forest lands are preliminary examined using spatial/GIS and statistical data focusing on the following aspects. Based on the examination results, PPAs are identified. In this regard, required GIS data are summarized in detail in Section d.

- Forest legal status
- Forest types (open forest, moderate dense forest, and very dense forest)
- Slope (contour)
- JFM project areas

1.3 Socio-economic conditions

Socio-economic conditions that are essential for the BFBP making will be discussed. Main items are shown below.

- The number of households engaged in shifting cultivation and their areas
- The number of RoFR holders, the area of RoFR lands, and progress status of demarcation
- Main and other livelihood measures

2. Assessment of PPAs

PPAs are assessed from the following aspects. The assessment is conducted based on field survey results explained in Section c.

- **Applicability of plantation models:** assessed by checking forest conditions on the ground and studying current and past vegetation types as well as drivers of the forest degradation.
- **Adaptation of Soil and Moisture Conservation (SMC) measurements:** assessed by checking geographical features to select a model of check dams or construct other SMC structures taking into considerations socio-economic dimensions.
- **Potential of new JFMC formulation and expansion of existing JFM project areas:** assessed by checking forest land conditions of candidate sites for new JFMCs and existing JFM project areas

including JICA JFMCs and non-JICA JFMCs¹², existence of RoFR lands, and willingness of villagers to participate in forest management through JFM programmes.

- **Livelihood development potential:** assessed feasibility of practicing agroforestry and other livelihood activities by forming groups considering market potentials.

3. Beat level planning

This section discusses beat level planning consisting of the following items.

- **JFM project areas to be intervened:** project areas for newly established JFMCs and those for the extension of existing JFMCs including JICA JFMCs and non-JICA JFMCs.
- **Forest management activities:** total areas of each plantation model to be established in target beats and implementation mode (JFM mode or Department mode).
- **Soil and moisture management:** the number of check dams and other SMC structure required to be constructed considering livelihood development activities.
- **Livelihood development:** options of feasible livelihood activities, area of agroforestry, names and/or number of JLGs/JFMCs consisting group(s).

c) Workflow

The entire process of BFBP preparation is shown in Figure with main actors and timeline. The numbers at the top left corner of each step correspond to the number in Section d.

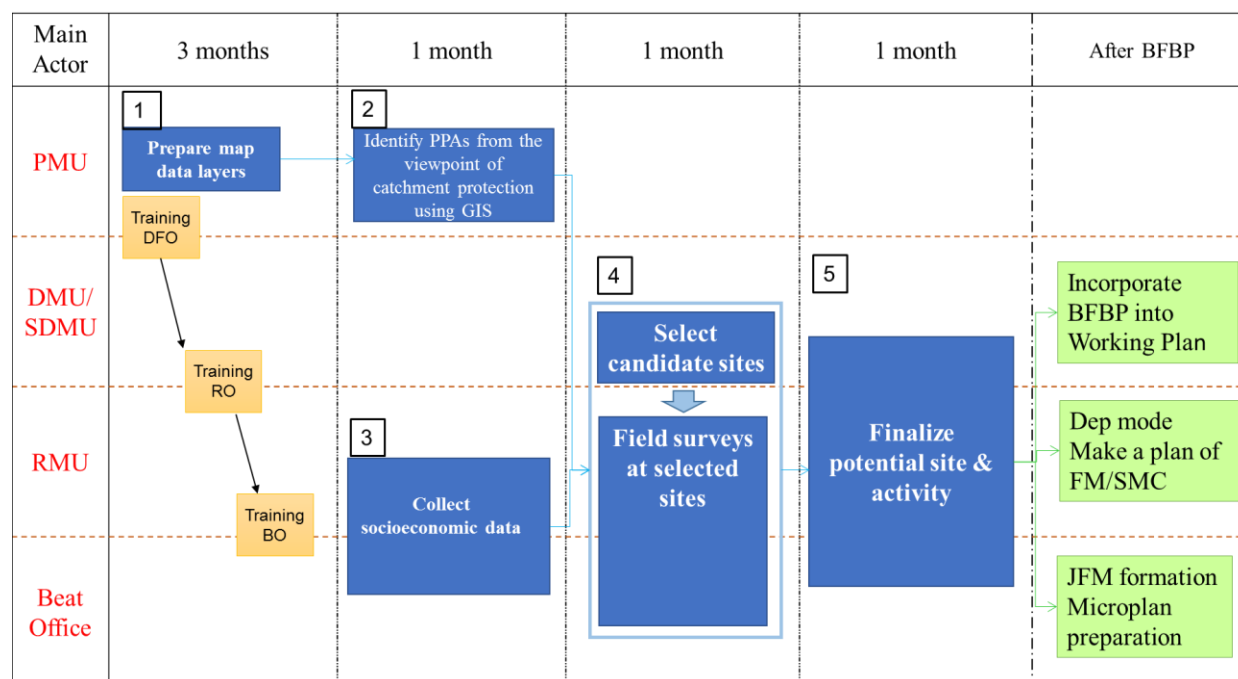


Figure: Process of BFBP preparation

¹² JFMCs formulated by TFIPAP are called JICA JFMCs and those formulated by other programmes or schemes are called non-JICA JFMCs in this report.

For the preparation of BFBP, roles and responsibilities are divided accordingly. First, DFOs are responsible for forming study teams comprising SDFOs, RFOs, LCs/COs, and BFOs of selected beats. DFOs are also responsible for organizing workshops at DMUs on the procedure of the BFBP preparation. Second, SDFOs prepare the plan together with RFOs and BFOs. Third, the District Forest Project Planning Committee chaired by DFOs, SDFOs, RFOs, LCs/COs, BFOs, and representative members of PMU and Working Plan Division is held to approve BFBDs. Once BFBDs are approved, BFBDs are further shared with Panchayat Samiti or Block Advisory Council (BAC).

d) Methods

Methods taken for the five major steps shown in the above workflow and their relations are explained below.

Step 1: Prepare map data layers

Table summarizes data layers required for BFBD. Of all the data layers, relevant data layers are selectively overlaid depending project needs, and appropriate maps are prepared accordingly.

Table: Required data layers for BFBD

Outputs	Working Plan		Beat Forest Basic Plan	Microplans
Scale	District / Range		Beat	JFMC
Map Scale (Tentative)	1:50,000 / 1:12,500		1:25,000	1:12,500
Data Layers	For existing plans	For future plans	<ul style="list-style-type: none"> Forest cover Roads Rivers Residential areas Contours Slope Administrative boundaries Legal forest boundaries JFMC (Phase 1) Check dams (Phase 1) Micro watershed (Phase 1) Soil erosion status Public facilities Existing JFMC 	<ul style="list-style-type: none"> Forest cover Roads Rivers Contours Slope Legal forest boundaries Check dams (Phase 1) Micro watershed (Phase 1) Vegetation types Public facilities
	<ul style="list-style-type: none"> Rivers Roads Administrative boundaries Legal forest boundaries Compartment boundaries Block boundaries 	<ul style="list-style-type: none"> Rivers Roads Administrative boundaries Legal forest boundaries Compartment boundaries Vegetation types RoFR lands Regrouped villages Existing JFMC 	<div> <p>Red: PMU or Outsourcing</p> <p>Green: PMU</p> <p>Blue: RMU and Beat Office</p> </div>	

All required data layers are prepared separately and used in combination to prepare maps. First, data layers in red and green are prepared by PMU or outsourced mapping agency. Second, existing data layers in black are reused in SCATFORM. Third, data layers in blue are collected by RMU and Beat Offices using GPS. The collected data are transferred from RMU to PMU, and necessary data layer and maps are prepared by PMU using GIS.

Step 2: Identify PPAs from the viewpoint of catchment protection using GIS

Crucial areas for activities in the catchment protection field are identified in two stages. First, target villages in selected beats are selected focusing on conditions of open forest areas and slope. Second, spatial assessment for potential JFM project areas is conducted considering such conditions as existing JICA JFM project areas and distance from villages. Figure illustrates this two-stage process in detail.

**Stage 1:
Prioritizing Target Villages**

**Stage 2:
Spatial Assessment**

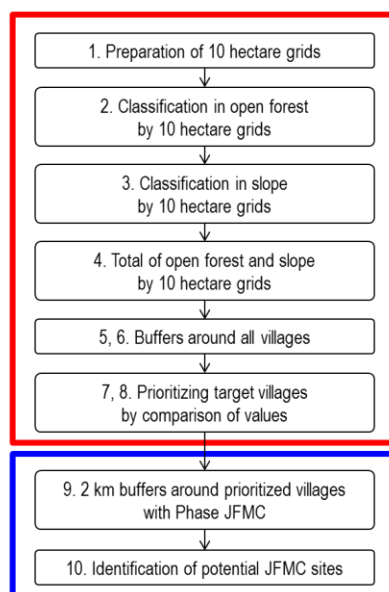
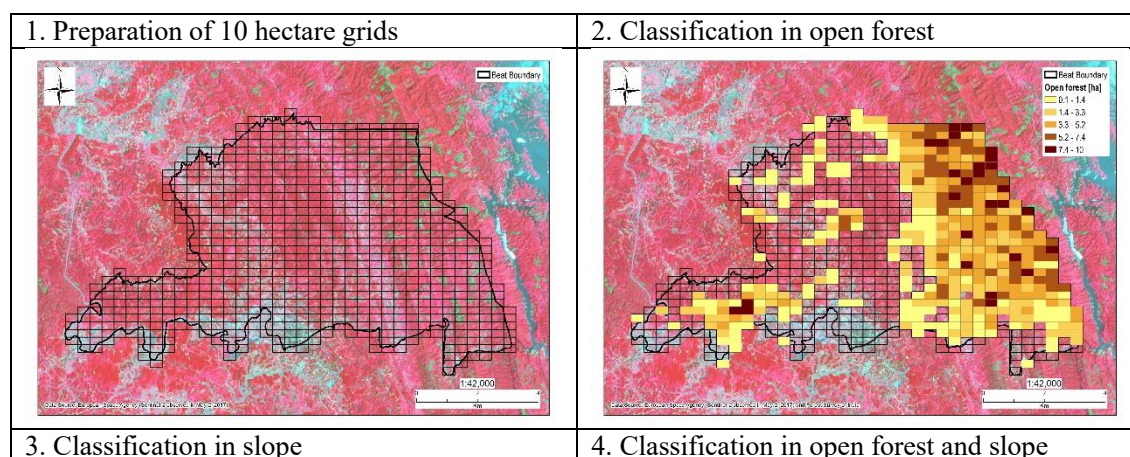


Figure: Workflow to identify potential JFM project areas

Figure further illustrates a series of maps prepared in steps from 1 to 10 in the above figure using the case of Nutanbazar Beat. Of all five villages, two villages in the beat are selected based on the values for open forest and slope, and the potential JFM project areas are spatially examined considering existing JFMCs, forest cover type, and legal forest status.

For this, the below maps use 2 km buffer as an example, and this distance can be changed as necessary. According to the current JFM Resolution, JFM are established within 2 to 3 km from village boundaries. Further, the increase of distance from 2 to 3 km to 5 km may be considered in the future.



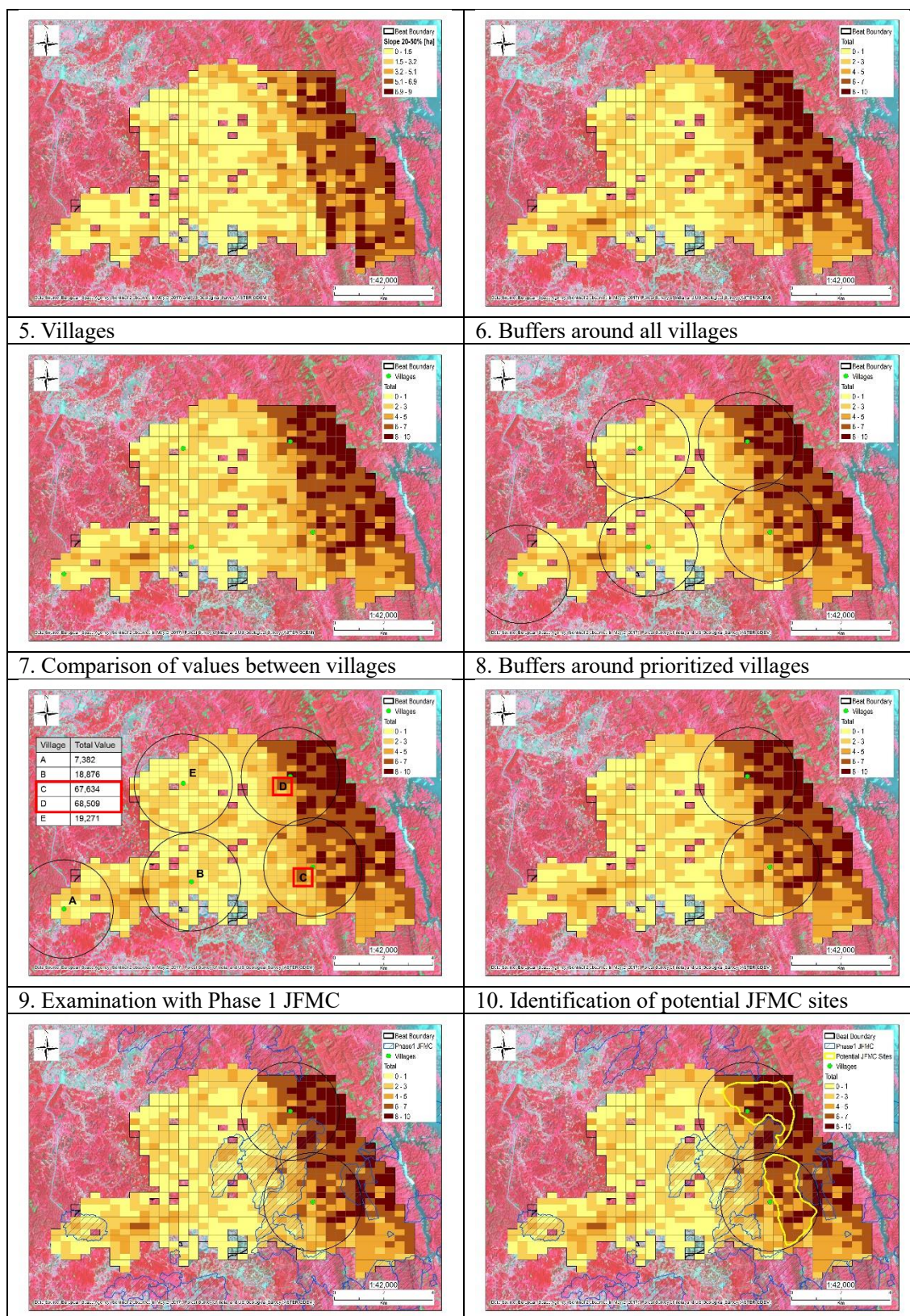


Figure: Evaluation Analysis for identification of potential JFM project areas

To sum up, target villages in selected beats are selected and prioritized based on indicators of open forest and slope. Considering the amount of time required as well as meeting requirements for catchment protection, detailed field surveys are conducted only for target villages, while socioeconomic data are collected for the all entire beats.

Step 3: Collect socioeconomic data

At the same time as the identification of PPAs from the viewpoint of catchment protection using GIS (Step 2), socioeconomic data are collected using secondary data and conducting interviews with key informants such as panchayat members, JFMC presidents, and female Executive Committee members of JFMCs. Beat officers are responsible for the data collection in collaboration with LCs and COs under supervision of RMU. In this regard, a data collection form in Annex 4 is prepared. As this form indicates, not only socioeconomic data, but general information of beats and other data relevant to forest management and catchment protection are also collected. Moreover, for location information of villages, close communications between PMU and RMU are required.

Step 4: Select candidate sites and field surveys at selected sites

PPAs identified using GIS (Step 2) are examined in terms of validity based on socioeconomic data collected (Step 3). In case that PPAs are too large in size or the number of candidate sites of new JFM project areas is too large within selected beats, the size of PPA and the number of candidate sites for new JFM project areas are reduced by referring to the socioeconomic data, more specifically, the number of villages, households, and existing JFMCs in the target beat. Regarding forest management activities, moreover, the quantitative target of each plantation model allocated to each target beat prior to the preparation of BFBP¹³ is also considered as a key indicator during the examination.

After target PPAs are determined, field surveys are conducted in PPAs to check actual conditions of forest lands, including vulnerability to soil erosion, and evaluate suitability of the areas for applying plantation model and constructing SMC measurement structures. Specifically, checking forest conditions is conducted based on the criteria for selection of plantation models as shown in Table:.

¹³ Quantitative target of each plantation model will be allocated to each target beat in response with the proportion of open forest area in a beat to that in the total project target area (see section c.1 (component 1)).

Table: Selection criteria of plantation model

Mode	Criteria Plantation model	Forest condition			Land condition ²	Social condition	
		Teak plantation	% of tree crown ¹	Availability of stumps/seeds in the field		Distance from village (Max) ³	Needs of JFMC
JFM Mode	AR Mix	No	Less than 20 %	No	-	5 km	Timber, Fuelwood, NTFP
	AR Bamboo	No	Less than 20 %	No	-	5 km	Bamboo
	ANR Mix	No	More than 20 %	Yes	-	5 km	Timber, Fuelwood, NTFP
	ANR Bamboo	No	More than 20%	Yes	-	5 km	Bamboo
	Teak plantation	Yes	More than 20%	Yes	-	5 km	Small wood, Fuelwood
	Silvi-pastoral	No	Less than 20 %	No	-	2-3 km	Fodder
Dept. Mode	Filter strip	-	-	-	Relatively flat (15 %) Next to cultivated land	-	-
	River bank plantation	-	-	-	Vulnerable to erosion Near to residential/ Cultivation lands	-	-

Note 1: Percentage of tree crown shall be applied flexibly with +/-5% differences.

Note 2: Slope shall be taken into consideration in selecting tree species not selecting plantation models.

Note 3: The revision of the revised resolution on Joint Forest Management in Tripura 2001 will be under consideration.

In addition to the above criteria, approximate location of non-JICA JFM project areas and RoFR lands as well as shifting cultivation lands and fallow lands are examined through interviews with non-JICA JFMC members and RoFR land holders.

Step 5: Finalize candidate sites, activities, and implementation mode

Based on results of the field survey discussed in Step 4, potential sites and activities intervened by the project are finalized, and outcomes are incorporated in BFBP. In case that selection of candidate JFM project areas is further needed, the following criteria are applied.

- Type of JFMC (JICA JFMC or non-JICA JFMC)
- Intensity of forest degradation.
- Slope in 3 km radius, accessibility from a village to the candidate site.
- Willingness of villagers to participate in forest management.
- Ratio of households engaged in shifting cultivation to the total number of households in a village.
- Ratio of RoFR land holders (households) to the total number of households in a village

Regarding forest management, forest management sites are covered by establishing new JFM project areas and those covered by extending existing JFM project areas are clarified. Depending on the location of forest management sites, implementation modes are necessarily determined. When forest management sites are located within JFM project areas, JFM mode is introduced. When forest management sites are located outside JFM project areas, on the other hand, Department mode is introduced.

Regarding application of plantation model, in case of JFM mode, final decisions are made when JFMCs make or revise their micro plans. If some plantation models are applied outside JFM project areas, on the other hand, Beat Office is responsible for preparing a detail plan of application of plantation models as described in Section e.

As for SMC, SMC facilities are located within management areas of JFM project areas. The actual locations of the facilities are decided by JFMCs for their purposes described in the micro plan. Use cases of water in check dams such as fishery and irrigation are closely linked with the other activities of JFMCs. The numbers of proposed facilities are summarized in Table below.

Table: Average quantities of SMC Works

Item	Purpose	Quantity/JFMC
Check dam	Water conservation, domestic water use, fishery, and irrigation	Model1: 3 dams Model 2: 2 dams Model 3: 0.2 dams
Brushwood check dam	Erosion protection in gullies	3 dams on average
Contour trench	Erosion protection on hillsides	2 hectares per Model 1 and brushwood check dam
Mulching and plantation around the SMC structures	Erosion protection around SMC structures	2 hectares per check dam and brushwood check dam

For livelihood activities except aquaculture at check dams, livelihood options identified through socioeconomic data collection and their analysis in Step 3 are reviewed and modified based on results of field surveys in Step 4. Appropriate livelihood activities for target beats are determined and then listed in BFBP. The list of determined livelihood activities in BFBP is used when JFMCs prepare their micro plans and revise them later.

e) Action to be taken after preparing BFBP

After BFBP is prepared, the following actions need to be taken. In case that project activities identified by BFBP are undertaken in JFM project areas, the JFMCs are responsible for deciding details of each activity in terms of site, specifications such as tree species and model of check dam, quantity, annual schedule, and annual budget whenever they make or revise their micro plans (JFM mode).

On the other hand, in case that project activities identified by BFBP are implemented outside JFM project areas, beat offices are responsible for making detailed plans that indicate specific sites, the quantitative target of each plantation model and/or SMC structures, annual schedule during the implementation phase of the project, and annual budget (Department mode).

Moreover, it is expected that BFBPs are eventually incorporated in working plans that is a framework of forest management at district level. For this, project activities need to be conducted maintaining consistency with other operations conducted by TFD. This also potentially enhances sustainability of forest management activities conducted by the project after the project period. DMUs are responsible for this action.

C4.3.1.5 Baseline Surveys

Baseline surveys will be carried out at 10% of target communities to be referred to in project monitoring. Socio-economic parameters will be collected through key informant interviews, focus group discussion and sample household surveys, whereas the biophysical parameters will be collected through satellite

image analysis, field transact survey, and other specified methodology. This survey will also give a baseline to be referred to in project monitoring.

It should be noted that Socio-economic baseline survey will be carried out before BFBP is prepared (the purpose is for both community planning and M&E of project) whereas Biophysical surveys will also be collected once on-site activities is carried out (the purpose is only for M&E for on-site activities). The survey communities will be selected considering the distribution of target beats. The baseline survey will be outsourced with TOR as per Annex 5 and supported by Project staff. Items surveys are listed below.

Table: Baseline Survey Items

Theme	Items
Socio-economic parameters	
Basic information of village:	Population, male/female, literacy/poverty rate, infant death rate, labour population, access to financial/social service, immigration/emigration for work, Infrastructure development and utilization (road, power, gas, kerosene, water resources, improved cooking stove, internet/mobile phone), Existing community organizations/NGOs, women's self-help group, nature resource (water and forest) user groups, other local organizations and activities carried out by them, Poverty reduction and community development activities, examples of convergence with another agency, activities by CSR, Public services (activities in rural area), formal and informal financial services (system and utilization), livelihood conditions of ST/SC and regrouped villages, telecommunication and other basic infrastructure)
Production and land use	Agricultural crop (production and sales/domestic consumption), land use pattern (shifting cultivation or permanent agriculture), cultivation land for each crop, livestock production (type of animal, production, feeds, role in livelihood, etc.), fodder production and grazing land, change in cultivation pattern (from shifting cultivation to permanent agriculture)
Forest/ tree utilization:	NTFP (product type, amount of harvest/sales, harvesting method, market and demand, value chain, other related companies), fuelwood utilization (# HH, amount/HH, collection method, prices), fodder production/grazing intensity, fuelwood alternative resources Timber demand and supply, tree planted in home garden/farmland, agroforestry (types of crop/tree combinations, land use in the farm), etc. Forest cover change
Land ownership status	Land ownership and utilization (by population, comparison with other state, by sex and encroachment to forest)
Gender Status	Status of women in HHs and villages, education level, decision making process by male/female, income by woman (women groups), efforts on gender issues
Energy	Availability of fire wood, utilization of power, gas, cooking stove (type and utilization of improved ones)
Water resources and soil erosion	Water in taking system, availability/abundancy of water resources for drinking and irrigation Status of soil erosion: trends of colour of stream in heavy rain, gully formation (location and intensity), sedimentation in irrigation dam/fishponds
Awareness	Awareness on knowledge and practice of sustainable usage of forest and water resources among the JFMC members
Bio-physical parameters	
Forest cover	Satellite image analysis
Forest composition	Transact survey, comparison between treatment and control plots

and biodiversity/ Soil moisture	
Carbon stock	Methodology developed by research agency
Water spring field inspection	At eight villages selected from upper catchment (one per district), cross-sectional and longitudinal survey of stream and the status of water availability shall be inspected by observing catchment area/sedimentation of water in taking points.

C4.3.1.6 Identification of RoFR and JFMC lands

Demarcation of forest lands to JFMC

In order to achieve the project purpose, forest should be managed with a sense of ownership; thus, demarcation of forest lands to forest communities (JFMC) needs to be undertaken in the beginning of project. The demarcated forest to JFMC should be clearly mapped in micro plan and in order to recognize the area on the ground, the pillars will be placed around the demarcated forest. The demarcation process will be carried out through micro planning of each JFMC with the form of PRA with assigned forest officer (e.g. beat officers) and project staff in the range level (LC/CO).

The project will demarcate 1) areas managed by RoFR households (grouped households, 4HHs 3.5 ha minimum), and 2) areas managed by JFMCs. Pillars will be posted for demarcated area for each JFMC so as to avoid any conflict between two JFMCs/EDCs regarding area under management.

The project demarcated to JFMC will be further divided into three types: 1) forest areas demarcated to existing JFMCs formed by TFIPAP (clear forest demarcation is present), 2) forest areas where NAP formed JFMCs is present (clear demarcation is not available but JFMCs are already formed), 3) forest areas through forming new JFMCs/EDCs with forest community in the vicinity forest. A micro plan will be prepared for JFMC area and TFD implementation plan will be prepared for TFD implementation areas.

The JFMC/EDC area demarcation process will follow the following procedure.

1. The areas demarcated for JFMC formed by JICA TFIPAP will be mapped in Beat forest map (areas are already demarcated in TFIPAP).
2. Area managed by JFMCs formed by NAP will be demarcated through the process of microplanning considering plantation/forest protection activities in the past.
3. The potential to form new JFMC shall be examined for remaining areas and demarcated areas will be specified through microplanning process (as per JFMC Resolution¹⁴ with participatory assessment).

C4.3.1.7 Preparatory Activity for Community Mobilization & Planning

Community participation is pre-requisite for the successful implementation of the activities in JFM. Therefore, for their mobilization and planning of activities necessary preparations shall be done by the Project.

a) Modification/Development of Guidelines/manuals/Brochures

Modification of JFMC Management Manual or Development of New JFMC Manual

TFIPAP has developed management manual for JFMC management and microplanning. The manual shall be revised or new manual shall be produced in English and Bengali

¹⁴ Demarcation of forest land to new JFMC will be decided as per distance from forest community (within 3km for treatment area and 2km for forest protection), location of ROFR areas, location of treatment areas (5ha of open forests per beneficiary for natural regeneration, 2ha of scrub forests per beneficiary for Afforestation, up to 100 ha of good forest (crown density >40%)). The detail is described in Tripura JFMC resolution.

The objective of the manual is to disseminate knowledge and provide guidance to the stakeholders about the concept of JFM, objectives of JFM, process of formation of JFMCs/EDCs, roles, responsibilities and duties of community and forest department in joint forest management, effective management of their organizations and the implementation of activities, recording of minutes of meeting and book keeping, microplanning, process, approach and steps, formats for micro plan development, monitoring system for committees.

Guidelines for Formation and Management of SHG, JLG, NTFP Collectors Groups

The project will develop guidelines describing objective, process, approach of formation of Self Help Groups, Joint Liability Groups (JLGs), NTFP Collectors Groups, their structure, roles and responsibilities, group management financial management/accounting procedure, record keeping of meeting, saving and internal loaning, visitor register, accounting system, monitoring methods of SHG activities.

General Guidelines of Loan Disbursement and Income Generation Activities

Project will develop rating methods and tools for rating of SHGs for loan disbursement, procedure and system of release of loan to SHG, repayment of loan, IGA planning, business plan development, approval of business plan, time line of release of fund for IGA, prototype of MoU to be signed between SHG and JFMC for loan disbursement. The guidelines shall also briefly describe various IGA activities undertaken in the project.

Development of Manual on NTFP Based livelihoods

Manual will be developed on formation of NTFP collector's groups, NTFP group formation and management, and management of advanced/high potential value addition unit.

Development/Revision of Agroforestry and Livestock Based IGAs Guidelines

TFIPPA has developed guidelines/brochures on fish farming, agroforestry, pig farming, poultry, goatery etc. As per requirement of the SCATFORM project, either existing guidelines/brochures shall be modified or new developed in Bengali and English

PMU shall hire consulting services for the modification of existing guidelines, manuals, brochures for which the consultants shall be hired on competitive bidding process

b) Formation of DMU, SDMU and RMU

For the effective implementation of JFM activities in the field, DMU, SDMU and RMU shall be constituted and notified by TFD as per structure and function shown in Attachment 1.

The DMU, SDMU and RMU shall be also provided with facilities required for the smooth running of units and operation in the field.

c) Recruitment of Community Organizers (COs), Livelihood Coordinators (LCs) and Field Facilitators (FFs)

The PMU will hire COs who will be responsible for facilitating community mobilization, formation and strengthening of JFMC/SHG/JLG, microplanning exercise and micro plan development and implementation and record keeping.

LCs shall be hired by PMU to assist SHG, JLG, JFMC in selection, planning, skill development training, record keeping, business plan development and implementation of IGA including value addition and marketing.

Both the positions will be hired through advertisement from open market on contractual basis after performance evaluation as per the guidelines of the Government of Tripura and contracted by PMU. Those who have minimum Bachelor Degree shall be hired for the posts of COs and LCs. A person who has minimum matriculate certificate shall be appointed as FFs on the recommendation of concerned JFMC/EDC on contract basis by respective JFMCs/EDCs with prior approval of DMU. FFs shall assist in organizing meeting, record keeping, and implementation of activities at village level. FFs shall report to Beat officer directly whereas COs and LCs shall report to RMU. The RMU in collaboration with Beat Officers will supervise and monitor the activities of the COs and LCs. Persons for those three positions above having experience in externally aided project shall be preferred at the time of recruitment. For their TOR, see Attachment 08.

C4.3.1.8 Review and Revision of Project Manual

a) Operation Manual

Operations Manual will be the guiding document for the implementation of project stipulating basic financial and administrative procedures at PMU, DMU, SDMU and RMU. Items to be covered in the manual are suggested in the following table. It will contain the guiding principles, norms and rules, including financial matters. As was the case in TFIPAP, the financial sanctioning power of officers in PMU should follow the Delegation of Financial Powers Rules of Tripura, published by the GoT. Once drafted, the Operations Manual needs to be approved by the High-Power Steering Committee. Drafting and obtaining approval for the Operations Manual should be one of the first tasks for kick-starting the project and should be completed within 5 months.

Table of Contents of Project Implementation Manual

Chapter 1: General Introduction: project objectives, project implantation committees or units, project components and sub components

Chapter 2: Project Implementation Structure: Organizational structure (HPSC, Governing Body, Executive Body, structure and function of DLCC, PMU, DMU, SDMU, RMU, NCE, Crafts and More) and their function (roles and responsibilities), procedures/conditions of recruitment/selection/appointment of staff, remuneration, contract, benefits (leave, allowances, PF/gratuity TA/ DA etc.) to contractual staff and staff on deputation, staffing pattern and deployment of each category of staff in PMU, DMU, SDMU, RMU, NCE, Crafts and More, performance measurement, code of conduct, disciplinary matters.

Chapter 3: Delegation of Administrative, Financial and Procurement Powers to Governing Board, PMU/DMU-

Chapter 4: Procurement, Store Inventory and Other Items

Chapter 5: Accounting System: Budget and annual plan, fund management, accounts head, account management and compliance of audit objections, use of interest earned, Annual Report of the Society

Chapter 6: Procurement and Implementation Procedures- Consulting Services, Procurement Package and Methods Principles of Procurement of Goods and Services, JICA's Review and Concurrence for Procurement, Procurement and Implementation, General Terms and Condition of Procurement

Chapter 7: Monitoring and Evaluation

Chapter 8: Store inventory, files and record keeping, vehicle management etc.

b) Technical, Training and Orientation

ntation Manuals/ Handbooks/Materials

TFIPAP has developed a number of manuals, handbooks and materials. For the implementation of SCATFORM, some of these manuals and handbooks may be revised while some new items need to be developed. Lists of existing manuals/handbooks/materials that need to be updated/developed are as per below. Depending on the purpose of using the materials, they need to be prepared in English, Bengali and/or Kokborok.

Table: Materials to be Updated/Developed

Sl. No.	Name of Publications	Category	Language1	Language2	Responsible Actor	Working Actor	Approval Actor	Timeline*
1	Standard Management Manual	Manual	English	Bengali	PMU		PMU	A M J J A S O N D J F M
2	Micro Planning Manual	Manual	English	Bengali	PMU		PMU	A M J J A S O N D J F M
3	SHG	Handbook	English		PMU		PMU	A M J J A S O N D J F M
4	Income Generation Activities	Handbook	English		PMU		PMU	A M J J A S O N D J F M
5	Vegetative Propagation of Bamboo	Training Material	English		PMU		PMU	A M J J A S O N D J F M
6	Basics of SHG	Training Material	English		PMU		PMU	A M J J A S O N D J F M
7	Maintenance of SHG Accounts	Training Material	English		PMU		PMU	A M J J A S O N D J F M
8	Fish Farming	Training Material	English		PMU		PMU	A M J J A S O N D J F M
9	Agro-forestry	Training Material	English		PMU		PMU	A M J J A S O N D J F M
10	Pig Farming	Training Material	English		PMU		PMU	A M J J A S O N D J F M
11	Kuroiler Farming	Training Material	English		PMU		PMU	A M J J A S O N D J F M
12	Bamboos of Tripura	Training Material	English		PMU		PMU	A M J J A S O N D J F M
13	Honey Cultivation	Training Material	English		PMU		PMU	A M J J A S O N D J F M
14	Cultivation & Sustainable Collection of NTFPs	Training Material	English		PMU		PMU	A M J J A S O N D J F M
15	Goat Rearing	Training Material	English		PMU		PMU	A M J J A S O N D J F M
16	Brochures	Information	English					
17	Newsletters	Information	English					
18	Product Catalogue of Crafts & More	Information	English					
19	Shopan - on Broom Grass	Documentary		Bengali				
20	Yaklik - on Broom Grass	Documentary		Kok Borok				
21	Agro-forestry	Documentary	English					
22	Broom Grass Harvesting	Documentary	English					
23	Income Generation Activities	Documentary	English					
24	Success Stories on Fishery, Piggery and Poultry	Video						
25	Anandadhara - Project Achievements	Film	English					
26	Artisan Development Program	Information	English					
27	Chirantan - Brochure on Sustainability	Information	English					
28	Van Mela - Pictorial Journey	Information						
29	NTFP Vol. I & II	Information	English					
30	Proceedings of Bamboo Workshop	Information	English					
* assuming project starts from April 1, 2019								2019 2020

Sl. No.	Name of Publications	Category	Language1	Language2	Responsible Actor	Working Actor	Approval Actor	Timeline*
1	Project Operation Manual	Manual	English	Bengali	PMU	PMU	GB/ HPC	A M J J A S O N D I F M
2	Finance and Accounting Manual	Manual	English		PMU	PMU	GB/ HPC	A M J J A S O N D I F M
3	M&E Manual	Manual	English	Bengali	PMU	PMC	PMU	A M J J A S O N D I F M
4	MIS - Data Collection and Formats	Guidelines	English		PMU	PMC	PMU	A M J J A S O N D I F M
5	Beat Action Plan Preparation	Handbook	English	Bengali	PMU	PMU	PMU/ TFD	A M J J A S O N D I F M
6	Micro Planning	Handbook	English	Bengali	PMU	PMU	PMU	A M J J A S O N D I F M
		Handbook		Kok Borok	PMU	PMU	PMU	A M J J A S O N D I F M
7	Survey and Demarcation of JFM/ RoFR lands	Guidelines	English	Bengali	PMU	PMU	PMU	A M J J A S O N D I F M
8	SMC Structures & Specifications	Manual	English	Bengali	PMU	PMU	PMU/ TFD	A M J J A S O N D I F M
9	Plantation Models & Specifications	Guidelines	English	Bengali	PMU	PMU	PMU	A M J J A S O N D I F M
10	Agro-forestry Models & Specifications	Guidelines	English	Bengali	PMU	PMU	PMU	A M J J A S O N D I F M
11	Hi-Tech Nursery - Sapling raising and Management	Manual	English		PMU	PMU	PMU/ TFD	A M J J A S O N D I F M
12	Decentralized People's Nursery	Guidelines	English	Bengali	PMU	PMU	PMU	A M J J A S O N D I F M
13	Training Master Plan - National & Overseas	Plan	English		PMU	PMC	PMU	A M J J A S O N D I F M
14	Organic Farming & Certification	Guidelines	English	Bengali	PMU	PMC	PMU	A M J J A S O N D I F M
15	High Potential Processing Centre	Guidelines	English		PMU	PMC	PMU	A M J J A S O N D I F M
16	Upgrading Eco Parks	Guidelines	English		PMU	PMU	PMU/ TFD	A M J J A S O N D I F M
17	Ecotourism as livelihood for EDC	Guidelines	English	Bengali	PMU	PMU	PMU/ TFD	A M J J A S O N D I F M
18	Procurement of Goods & Services under the Project	Guidelines	English		PMU	PMU	PMU	A M J J A S O N D I F M
19	Building Construction under the Project	Guidelines	English		PMU	PMU	PMU	A M J J A S O N D I F M
20	Environment and Social Considerations	Manual	English	Bengali	PMU	PMC	PMU	A M J J A S O N D I F M
21	Gender Mainstreaming under the Project	Guidelines	English	Bengali	PMU	PMC	PMU	A M J J A S O N D I F M
22	Management of Revolving Funds	Guidelines	English	Bengali	PMU	PMC	PMU	A M J J A S O N D I F M
23	GIS and GPS Operations	Handbook	English	Bengali	PMU	PMC	PMU	A M J J A S O N D I F M

C4.3.1.9 Orientation of Project Staff

The orientation for the PMU, DMU, SDMU and RMU personnel will be conducted once the Operation Manual is developed and the sufficient number of PMU personnels is deployed. Planning and Implementation Division as well as Training Division will be in charge of planning and designing the orientation. The orientation will be an opportunity to establish common understanding of the project objective and approaches. An overview of the implementation, monitoring and reporting modalities, and financial flow will also be given in the orientation.

C4.3.2 Monitoring & Evaluation

Broadly, there can be two types of data that are required for project monitoring; a) data for progress monitoring which indicate the idea of how the project activities are being implemented, particularly against the plan; and b) performance indicators (operation and effect indicators) which provide idea of the extent to which project is bringing about the expected results. Evaluation, on the other hand, is an assessment of the project (or its ongoing activities) to determine whether the project is on track to achieving the stated targets. M&E are both process through which the people involved in the project can plan next course of actions to improve performance, make informed decisions and to reach the targets.

Apart from routine monitoring of progress of the project implementation, the changes made by the project need to be also captured. Based on the overall project design, a set of indicators to be monitored, and procedures to monitor these indicators need to be decided by the PMU at the beginning of the SCATFORM. Considering the SCATFORM is focusing on forest management and catchment protection, the areas afforested under the project and the number of check dams constructed in the project is suggested for operational indicators. Ratio of JFMC/EDC annual General Body meeting held each year in the project target area can also be an indication of strengthening of JFMC/EDC to a certain extent. In addition, since the livelihood development is another focus area of SCATFORM, increase in project JFMC/EDC household income can be another indicator.

Apart from these measurable indicators, qualitative effect such as improved socio-economic status of women can be also considered to be included. The final set of indicators to be monitored in the project should be decided by the end of the first year of the project. MIS and Monitoring Division can take lead of this process while advice can be sought from MIS/monitoring specialist of PMC once they are in place.

For effect indicators for the Project together with its monitoring methods and responsible institution for monitoring, see Operation and Effect Indicators in Attachment: 25.

Observation system of the forest soil moisture shall be established by PMU, PMC, DMU and RMU under assistance of Forest Research Directorate of TFD, during the initial period of the project. Firstly the observation manual shall be prepared by PMU and PMC under assistance of Forest Research Directorate of TFD. Based on the manual, RMU shall prepare the observation plan of target Beats and BO shall conduct the observation. During preparation of the manual and planning of the observation, the following matters shall be noted:

C4.3.2.1 Monitoring

a) Annual Planning & Review Workshops

To chart out the plan of operating for each year, annual planning and review workshops will be organized at DMU and PMU levels. The workshops will ideally take place in the month of February after the APOs are prepared at field level, while give enough time to converge at State level and link the plans with following fiscal year's disbursement forecast.

District level annual planning and review workshop will be hosted by DMU Chief. The workshop will be attended by RMU chiefs and, should there be requirement, by some of the JFMC/EDC representatives and field officers. Progress and specific achievement for the year should be reviewed in the workshop while any issues and challenges may be identified. Based on the progress review, the implementation plan for the following year will be worked out.

Once the District level annual plan is prepared, the PMU level workshop can be organized. The function can be one day event both at District and PMU level. Result of PMU level workshop shall be published and shared with stakeholders.

b) Concurrent Monitoring & Review

Regular monitoring of project activities and progress would play key role in making sure that the project is on right track. This has to be done as a routine practice in various levels of project implementation bodies to obtain feedback for determining any requirement of midcourse correction. Also, it is important to understand that the "monitoring" does not only look at what is the progress but understanding the issues behind the particular progress or delay and rectifying the situation by giving feedback to the personnel who are working on the ground level. Review meeting and field visit should be conducted on regular basis for this purpose. Following table shows the various bodies in SCATFORM who should be involved in the concurrent monitoring along with minimum suggested frequency. Review meetings for concurrent monitoring should be conducted based on the Annual Plan of Operation (APO) where types of planned activities and their physical and financial progress will be checked.

Tabl: Review Meeting

Implementing Body for Monitoring	Frequency for Review Meeting
High Power Steering Committee	Twice a year
Governing Body	Quarterly
Executive Committee	Monthly
PMU/DMU	Monthly
SDMU/RMU	Fortnightly
JFMC/EDC Executive Body	Monthly
JFMC/EDC General Body	At least twice a year

As the activities take place on the ground, the practice of monitoring must start from the community organizations. In TFIPAP, JFMC/EDC had number of different registries including plantation register, SHG register for loans and repayment, agroforestry benefit registers etc. In some cases, there are variances in the type of registers kept by JFMC/EDC. To make the effort of compiling information required for monitoring at east, standard formats of particular registers should be developed that can be used commonly across all JFMC/EDC. The entries made in the registers will double up as data for monitoring. Filling of monitoring format which is to be submitted to RMU can be done with the help of FF, if required. However, trainings should be provided to JFMC/EDC executive committee members so they can be capacitated to fill the format on their own. The monitoring format should include the following items to capture the real ground situation:

- Physical and financial progress
- Problems and issues faced
- Remedial actions taken or suggested actions for the problems and issues

At JFMC/EDC level, paper-based monitoring will be used. Data submitted from JFMC/EDC to RMU can be input to project database by data entry operator at RMU office. Use of MIS for project monitoring is discussed in subsequent section. Monitoring at RMU level shall include checking the exact location of each forest management activity conducted during each monitoring period and collecting the geographical data by using GIS instrument. The data will be collected and input in the field by Beat officer or Range Officer and photos of the implementation of activities shall also be taken for recording purpose by using a tablet. The data will be directly sent to DMU and PMU and compiled with other relevant data in MIS at PMU.

c) Computerized Accounting System

In order to ensure transparency of project intervention and fund flow, cash payment in the project should not be allowed. Transfer of fund from PMU to RMU offices shall be bank transfer and do not involve transaction of cash. The any payment to field staff as well as CBOs also shall be done by bank transfer or cheques. Those payments shall be well monitored and recorded by RMU, SDMU and DMU. Overall fund flow of the Project shall be tracked and accounted by PMU. For the said purpose, computerized accounting system using accounting software such as TALLY ERP9 would be introduced for maintaining financial records in the project from PMU to RMU offices. The accounting software would be customized and adopted for financial management, tracking disbursement as per APO and efficiently compiling SOE for submission to JICA, the State government, and Central Aids, Accounts and Audit Division (CAAA), the Ministry of Finance as required.

C4.3.2.2 Impact Assessment & Studies

a) Baseline Surveys

Baseline surveys will be carried out at 10% of target communities to be referred to in project monitoring. As described in 5.1.1.6, socio-economic parameters will be collected through key informant interviews, focus group discussion and sample household surveys, whereas the biophysical parameters will be collected through satellite image analysis, field transect survey, and other specified methodology. This survey will also give a baseline to be referred to in project monitoring. Biophysical parameter in non-community areas will also be collected. Items surveys are listed in Table.

The baseline survey would capture physical and socio-economic situation of project target areas and communities. The baseline survey should be designed and conducted in such a manner that the data captured in it can be used for future assessment of the project. Therefore, methodologies should be given a due attention during the baseline designing. MIS and Monitoring Division together with monitoring

specialist of PMC may work out the broad framework for baseline survey while the actual work of survey will be outsourced to the third party.

As is mentioned in Operation and Effective Indicators, forest soil moisture will be also measured from the first year of the project. Measurement of soil moisture can be conducted by the Range and Beat officers.

b) Mid-term/End-term Evaluation

Mid-term evaluation can be conducted half way through the project around fourth year to rigorously check the progress of the project implementation, take stock of issues and constraints and suggest remedial measures, and to chalk out the plan of actions for the remaining project period. Mid-term evaluation is not mandatory; however, in consultation with JICA, the necessity of such study can be considered after the project starts its implementation. The evaluation study can be conducted by a third party appointed by the PMU.

Similarly, end-term or terminal evaluation can be conducted. End-term evaluation can make inventory of project outputs and draw lessons from the experience of project implementation. The result of the evaluation can be used to prepare the Project Completion Report which is a requirement for the project.

c) Impact Assessment

Impact assessment can be conducted by a third-party and the terms of reference for such studies and procurement method may be discussed with JICA. To capture the social and/or bio-physical impact of the project, the assessment study shall take place towards the end of the project. This can possibly be combined with the end-term evaluation.

d) Training Impact Assessment

For institutional strengthening, number of training programmes will be conducted in the project. Only if the impact of the training is checked, it can be ascertained that the capacity of the training participants has enhanced and the training has been effective. Framework for training impact assessment should be developed in the early stage of the project. Learning models like Kirkpatrick will be utilized. This can be done by the Training Division with an involvement of institutional capacity development specialist of PMC.

e) Thematic Short Studies (need based)

While project achievement measured in terms of Operation and Effective Indicators is quantifiable and result oriented, there are aspect of project implementation that are valuable for similar and future projects which are not necessarily captured in quantifiable manner. Although outcome and impact are generally seen as the most important factor in evaluating the project, processes in which the project implemented, how the challenges and issues were overcome and on what basis the decisions were made are also valuable lessons that can be obtained from the project. Such information is often not tangible and measurable, and therefore, it should be documented from time to time in the form of good practices for future reference.

C4.3.2.3 Annual Statutory Financial Audits

To keep transparency in utilization of project fund, all project related implementing units including PMU, NCE, DMU, SDMU and RMU. Qualified chartered accountant firm to conduct the annual audit will be appointed at the beginning of the project and the financial audits will be conducted annually. Audits for community organizations (JFMC/EDC) will be conducted separately.

C4.3.2.4 Public Relations and Communication

Sharing of information and building up the image of organization in the public eyes are integral part of the project. SCATFORM should formulate communication strategies in the early stage of the project. Public relations will be the responsibility of the Training Division of PMU. Some of the tools for the communication purpose are suggested:

a) Newsletters

PMU will publish and circulate a quarterly newsletter to provide stakeholders with news, work progress, photographs and insights. The newsletters will be prepared mainly in English and Bengali but some parts in Kokborok. The newsletters will be edited and designed by professional publishers to achieve professional quality, and 1,000 copies per quarter will be produced.

b) Brochures and leaflets

Brochures and leaflets on the overview of the Project and issues such as forest protection, JFM, wild life conservation and eco development, forestry technologies, farm forestry, NFWPs and income generation activities will be prepared in Bengali/Kokborok for distribution to JFMCs, EDCs, community members and general public to disseminate relevant information.

The brochures and leaflets will be printed for 1,000 copies and will be reprinted at the mid-term with revisions for the same numbers of copies.

c) Annual Report

The Annual Report, containing the progress report, findings and recommendations of the review team will be prepared by the PMU and circulated to the stakeholders. To secure the appropriate quality of the report, professional editors and designers will be hired. One hundred copies per year will be printed every year during the Project implementation period.

d) Website Development

The Project website will be developed as SCATFORM in Bengali and English languages, utilising a template driven Content Management System (CMS). The administrative access for editing and uploading will be done by the PMU, which will be responsible for providing contents for the website. The task of website design, development and maintenance will be outsourced to a competent agency. The website will have the following features: image gallery, articles, BLOG, drawing applets, banners, featured links, comments, forums, FAQs, surveys, newsletters and snapshots of Project progress.

C4.3.3 Phase-Out Activity - Project

a) Preparation of Sustainability Plan

After project completion, as PMU shall be closed, and assets shall be taken responsibility by TFD, PMU shall prepare Sustainability Plan for the assets created by the Project mainly under Department mode and obtain the approval from the State Government. The Plan shall include the items to be transferred such as materials, data, records, etc method of maintenance, financial allocation for their maintenance, officers/sections in charge of maintenance and monitoring methods. In case of knowledge/skills accumulated at PMU, although transferring plan including time schedule shall be prepared and transferred at the early stage, capacity development shall be equally provided to both PMU staff and TFD officials for the purpose of project sustainability during implementation stage. Some of the materials related to NTFP may be given to NCE.

As for GIS/MIS facilities, they shall be integrated to the one of TFD at the early stage and fully taken responsibility by TFD after project completion. Simultaneously, necessary skills shall also be transferred

to TFD officials. Although GIS/MIS facilities shall be transferred to TFD from PMU during project implementation, project operation purpose shall be prioritized for their usage.

b) Transfer of Assets and Resources

Asset inventory should also take place to stock of various materials and resources available with the project, which require new ownership. Institutions that are going to be responsible for the particular assets need to be identified while means of supporting operation and maintenance must be also worked out.

C4.4 JFM Mode

C4.4.1 Preparatory Activity for Community Mobilization & Planning

C4.4.1.1 Constitution/ Reconstitution of JFMC/ EDC

The purpose of this activity is to establish new JFM Committees as per state JFM Resolution if no other JFMC had been established in the village. The newly formed JFMC shall be oriented about JFM and its activities, state resolution etc. by the COs. If a defunct JFMC is selected, it shall be reconstituted, further if a village has large forest areas and other villages near by which has no JFMCs, new JFMC shall be constituted.

The RMU, along with BOs, FGs and together with the COs and FFs will visit targeted villages and develop rapport, make them understand the concept of JFM, need of their cooperation in forest management, provisions of state JFM resolution etc. In follow up meetings, they will discuss about the possibility of formation of JFMC when the interest of the villagers to participate in joint forest management will be ascertained at this stage. After villagers agree, the process of formation of JFMC shall be initiated as per “Revised Resolution on Joint Forest Management in Tripura 2001” no. F.17-159/FOR-DEV/97-99/28576-29028. JFM program shall normally cover degraded forest where 5 ha per beneficiary for natural regeneration and for planting and other activities. DFO shall constitute a JFMC by calling a meeting of willing families of concerned Gram Panchayat. There should be a quorum of at least 50% of willing beneficiary to form a JFMC. After receiving consent by willing beneficiaries in the meeting, the DFO shall constitute the JFMC within a period of three months.

a) Formation of General Body

A General Body will be formed from households who are willing to join the committee and participate in joint forest management and conservation. A household will have joint membership (husband and wife).

b) Formation of Executive Committee

Members of the Executive Committee will be selected from the members of the General Body. The Executive Committee shall comprise of Chairperson, Vice Chairperson and Treasurer, Gram Pradhan or any member of concerned Gram Panchayat as member and Beat Officer as a Member Secretary. Chairperson, Vice Chairperson and Treasurer shall be elected by members in Annual General Meeting (AGM). Proportional representation by SC, ST, other backwards classes (OBC) shall be ensured while selecting/electing Executive Committee members.

C4.4.1.2 Signing of MOU

JFMC and TFD shall sign MoU after the formation of General Body and Executive Committee.

C4.4.1.3 Micro Planning

a) Baseline Survey

The field level forest department officials along with LCs/COs/FFs and other team members shall be involved in collecting detailed information in respect of following:

(i) Socioeconomic survey of the target villages shall be conducted as per format developed and printed for collection of data. The survey will provide current socio-economic conditions of the households, village infrastructure, types of natural resources and its uses, population, number of families, ethnic composition, land holdings (big and small farmers), landless persons, artisans, distribution of house- holds etc.

(ii) Livestock -Number of animals and their distribution per household, animal husbandry practices including grazing, use of animals, animal products, diseases, mortality and morbidity, yields etc.

(iii) Agriculture and horticulture -Land use pattern, type of land, crops (tree/ agricultural) grown, seasonality of activity, irrigation, manure, pesticides, marketing and storage of produce.

(iv) Forest resource -Crop composition, stand quality, blanks, seasonality and quantity of non-timber forest products, nature and extent of dependence on forest resource of villagers especially the landless, marginal farmers and artisans.

(v) Other natural resources -community wastelands, grazing land, roads, water sources (springs, wells, rivers, ponds, lakes), stones and minerals etc.

(vi) Infrastructure such as school, primary health centre, agawadi, village, road, irrigation structure, drinking water facilities, electricity, communication etc.

Microplanning shall be done in participatory manner. It will be ensured by Beat Officer that all ethnic groups/castes/tribe, RoFR land holders, NTFP collectors, artisans, Executive Committee members of JFMC, SHG groups if any, women panchayat representative and officials from line department also participate along with JFMC members.

b) Assessment and Problem Analysis

During microplanning process and exercise will focus on assessment of social, institutional, livelihood, natural resources and identify problems and analyse and evolve solution.

c) Planning for Development

Based on finance available and local expertise/human and natural resources, a comprehensive plan for institutional, social and gender mainstreaming, natural resource management and development and livelihood plan shall be developed and compiled with time bound action plan and responsible institutions/actors. An indicative table is given for understanding and conducting analysis and planning

Table: Indicative Form for Situation Analysis and Planning

Resources/Institution	Problems Identified	Solution	Action Plan	Actors/Responsibility (who will act)
JFMC				
SHG				
Jhum cultivation				
RoFR land				
Agriculture				
Forest				
Water				
Livestock				
Others				

d) Preparation of Micro plan in JFM areas

As per the provisions of National Forest Policy 1988, the Government of India, vide letter No. 6.21/89-PP dated 1st June, 1990, outlined and conveyed to State Governments a framework for creating massive people's regeneration and development of degraded forest lands. In order to further strengthen the programme, the State Governments are supposed to take action on the following suggested guidelines vide letter No. 22-8/2000-JFM (FPD) Dated: February 21, 2000.

In case of new working plans, a JFM overlapping working circle should be provided to incorporate broad provisions for micro plans. To achieve these flexible guidelines should be evolved for preparation of local need based micro plans. For this purpose, the working plan officer will work in tandem with the territorial DFO and CF for finalization of the prescriptions of the JFM overlapping working circle. The micro plans should be prepared by the Forest Officers and Village Forest Protection Committees after detailed PRA exercise and should reflect the consumption and livelihood needs of the local communities as well as provisions for meeting the same sustainably. It should utilize locally available knowledge as well as aim to strengthen the local institution. It should also take into account marketing linkages for better return of NTFPs to the gatherers and should also reflect the needs of local industries market. This should be done with due regards to the environmental functions and productive potential of the forests and their carrying capacity and also their conservation and biodiversity values.

In areas where, the existing plans are in force (till their revision in future), for incorporation of micro plans in the working plans, a special order may be issued by the PCCFs for implementation of the micro plan should aim at ensuring a multi-product and more NTFP oriented approach. Without changing the basic principles of silvi-culture, deviations may be approved in the existing working plans if necessary. To ensure this, the concerned DFO/DMU/SDMU and Conservator of Forests should dovetail the requirements of micro plans with the working plans.

The micro plan should also take into consideration and provide suitable advice for areas planted/ to be planted on community lands and other Government lands outside the notified forest areas including the areas of Tribal District Autonomous Council in the state

e) Microplanning Processes and Planning

Entire microplanning processes shall be carried out in a systematic and interconnected manner following robust planning for meeting/PRA, survey, document development and approval, resource allocation for microplanning exercises, and ensuring participation of line department and all stakeholders.

The Project will plan and provide the following for microplanning.

- i. Development of guidelines for microplanning including formats of microplan document and its distribution among field forest officials, COs/LCs and others
- ii. Selection of JFMC in each selected Beat based on criteria
- iii. Training of JFMC Executive Committee members, field forest officials, contractual project field staff on process, approach and methods of microplanning and micro plan development
- iv. Fixing of dates, place and time of Beat wise microplanning
- v. Formation of micro plan team (A JFMC level microplanning team shall be formed for each village. The team may include: gram panchayat members, members from other local organization like co-operative societies, women savings group etc. few outsiders such as Block Development Officer (BDO), Extension Officer and officials of agriculture, forest, watershed, animal husbandry or other concerned departments, school and college teachers, community leaders, technical experts and members from NGOs)

vi. Arranging resources like chart papers, writing pad, pencils, sketch pens, vehicle etc.

f) Steps of Microplanning

Step 1: Identification of JFMC

Prior to microplanning project will identify JFMC to be undertaken for intervention and same to be communicated to the RMU/Beat. PMU will communicate DMU/SDMU to identify JFMcs based on criteria and inform PMU.

Step 2: Collection/Preparation of maps

Village and JFMC forest maps shall be prepared, preferably on 1: 4000 scale.

Step 3: Collection of data

Base line socio-economic and other relevant data from the village shall be collected for each JFMC. The data will be of two types, primary and secondary. Secondary data shall be collected from Panchayat and government offices including forest department where as to understand the current socio-economic condition of households sampled household survey and PRA shall be conducted.

Step 4: Orientation workshops

Project will organize orientation workshop for the JFMC, Member Secretary, and LC

Step 5: Planning meetings

PMU shall issue directives to DMU to organise SDMU wise meeting for the selected RMUs and Beat Officers by SDMU in charge for the preparation of RMUs for the microplanning with dates, place, resource requirement etc. so that micro plans are initiated and developed in time bound manner.

Prior to going to the village RMU shall also conduct a meeting for microplanning at first with the field level forest officials regarding explaining purpose of meeting, methods/tools to be used and tasks of members for the microplanning including time line. An instruction shall also be issued to concerned Beat Officers by the RMU.

Step 6: Information to the JFMC about meeting

The Beat Officer will inform the JFMC about the meeting and fix a date and place for a general meeting.

Step 7: Holding meetings with JFMC members

In the general meeting maximum participation of JFMC members from all section of people including women will be ensured. During meeting, the purpose of microplanning, role of forest department and role of JFMC members and COs/FFs/LCs will be explained by Beat Officer

Step 8: Conducting Spatial Grid map of the village demarking its boundaries and wards

In the general meeting villagers are involved in the drawing of a spatial grid map of the village indicating its territory, surroundings and wards.

Step 9: Identifying few Village Representative from each ward/hamlet and fixing date, time and place for ward wise PRA

In the general meeting and if village has large households it is often not possible to assemble all villagers. Thus, to involve the whole village in the process of this micro plan hamlet wise/ward wise representative is decided as the person responsible for organising meeting, PRA on a fixed date, place and time.

Step 10: Recording, documentation of the proceeding of meeting

While conducting the meeting one should make arrangements to record the whole proceedings of the meeting. This will be required while writing the report of micro plan as well as for the final presentation.

Step 11: Ward-wise/hamlet wise PRA

A range of PRA tools and methods will be used for microplanning for resource mapping and primary data collection and analyses for bringing all the stakeholders and users together for generating a common opinion and understanding on problems, potentials, possible solutions and prioritisation of the emerging consensus. The PRA will also discuss on potential activities to be planned for the JFMC.

Step 12: Consolidation of ward-wise/ list of potential activities

Once ward wise/hamlet wise PRA and required data collection is over, the information will be consolidated for further discussion in general meeting of JFMC.

Step 13: Cost-benefit

The PRA team shall analyse the cost and benefit in economic, resource augmentation, natural resource conservation, village development and social development.

Step 14: Feasibility and practicality analysis:

Feasible and practical analysis will be examined and discussed involving villagers during general meeting.

This requires local knowledge as well as technical knowledge; therefore, one may use the technical help and support from the different sectors involved.

The activities chosen by the villagers and perceived by the field worker for microplanning have to be analysed whether they are feasible or not on the following points:

- **Ecologically sound:** Environmental impact should be kept in mind whether or not or how the activities will affect the environment.
- **Socially and politically acceptable:** Each activity should be judged on the basis of its acceptance to the society for whom it is undertaken, otherwise no matter how good the work will be it will not get local involvement.
- **Economically profitable:** If there is no monetary gain the activity can't last for long.
- **Technically feasible:** Any activity chosen should have technically implementable in village setting the work could not be performed.

Step 15: Finalisation of the activities

The draft micro plan which includes various activities proposed by villagers and budget required etc. will be presented before the JFMC members. The activity shall be finalised by arriving at general consent of the villagers upon the prioritised list according to the budget available.

Step 16: Mutual obligation, roles and responsibility

During the general meeting and the time of finalization of microplan, the role, responsibility and mutual obligation of Forest department/project and the JFMCs members will be discussed and planned with indicator of success.

Step 17: Signing of Memorandum of Understanding (MoU)

Project will enter into MoU for the implementation of micro plan signed between Beat Officer and President/Chairman of JFMC

Step 18: Approval of Micro plan

The draft micro plan reviewed by the President/Chairman of JFMC and Member Secretary shall be submitted to the RMU for review and forwarding to SDMU/DMU for review and modification if any at each level. The micro plan shall be examined from technical, social, financial and legal point of view. Suggested modifications and necessary amendment of the draft micro plan shall be incorporated and finalized and approved by DMU.

Step 19: Implementation of Micro plan

Microplan activity will be implemented as per approved micro plan.

g) Validity period of Micro plan

A micro plan shall be prepared for a period of 5 years. Therefore, activities shall not be planned beyond five years.

h) Revision of Micro plan

Microplan is a dynamic document which shall be reviewed periodically in consultation with JFMC as per requirement and feasibility, and microplan shall be revised and revision shall be incorporated. Moreover, progress of each year should also be recorded in the microplan, which would facilitate monitoring of the project activities under the project.

i) Monitoring of Microplan implementation

DMU through RMU will ensure periodical monitoring of the progress of activities for mid- course correction and also to keep pace of implementation.

C4.4.1.4 Connectivity and integration of Micro plan and Working Plan as per National Working Plan Code 2014

a) Integration of Sustainable Forest Management Element in Microplan as per Working Plan code 2014

Microplan shall take care of the following provisions made under different acts/rules.

- i. Forest community rights related to use of community forest resources like minor forest produce, grazing grounds, water bodies, etc. recognized under the provisions of the Forest Rights Act 2006 or any other State Act/Rule can be exercised within the frame of sustainable management shall be considered.
- ii. The term “sustainable use” given in section 2(n) of the Forest Rights Act, shall have the same meaning as defined under section 2(o) of the Bio-Diversity Act, 2002. As per section 2(o) of Biodiversity Act, “sustainable use means the use of components of biological diversity in such a

manner and at such a rate that does not lead to the long-term decline of the biological diversity thereby maintaining its potential to meet the needs and aspirations of present and future generations". Therefore, while developing microplan such issues should be taken care of.

- iii. Details of existing community rights provided so as to assess their sustainability, reasoning for their continuity and enhancement of productivity.

b) Integration of Micro plan with working plan as per Working Plan code 2014

For the involvement and benefit of local stakeholders, micro plans are to be prepared within the ambit of working plan prescriptions for JFM areas & and eco development plans are to be prepared for eco-sensitive forest areas adjoining the notified protected areas. The management of the jointly managed forests is done through the provisions of a micro-plan prepared by the community. Micro-planning should be done in conformity with the overall working plan prescriptions of the forest division and may be reviewed by working plan wing of the state forest department.

c) Forest Development and Management in Micro Plan

Micro plans for JFM/EDC should not be driven only by general working plan prescriptions. Broad rule of thumb prescriptions for major forest cover types from the division-level working plans provide a quick reference for forest department field staff to identify silvi-culture treatments for the JFM forest, but these can be modified to find best site-specific prescriptions to manage secondary local species for community livelihood needs. The conflict of interests of ST, SC groups, NTFP collectors, should also be taken care of while prescribing closure of forest area, planting on traditional grazing area, and restricting fuel wood collection. As a part of the micro planning exercise, forest inventory work can be undertaken by going around one or two transects to note major vegetation in the assigned area and general soil and regeneration condition (good quality, degraded, and so forth). Measurements by a more systematic inventory process, in which sample plots (random or spaced along transects) could be used and key species in each plot recorded for trees of different ages, diameters, heights, numbers of stems, and quality can be supplemented by the project / Tripura Forest Department. The Member Secretary and local forest officials shall provide technical input in examining the forest situation and identify areas suitable for plantation, rehabilitation and areas requiring soil and water conservation.

d) Convergence

Project activities based on Micro Plan fall within the domain of various Line Departments (Agriculture, Fishery, Animal Resource Development, Rural Development etc.), whose meaningful participation is essential during planning and implementation of the micro plan activities.

Now there are two basic approaches for convergence for financial, technical/capacity building and related inputs. One approach is Top- Down and another is Down - Top. Both approaches are useful depending upon situations and need.

As a Top - Down approach , the Governing Board can decide on convergence and respective Line Department can issue directives to Field Level Functionaries (Down Level) to participate during microplan development and implementation and facilitate inclusion of activity (which is purview of the concerned Line department) based on need and priority and subsequently send proposal for necessary action. Once Field Level Functionaries are directed from Top, they are bound to converge at field level.

As a Down -Top approach , respective Line Department officials can actively participate in planning and send information to higher up Officials (Top Level) mentioning activity chosen in micro plan, quantum of financial input, type of technical/skill development/capacity development support and other detail for sanction/approval.

The project has also proposed for the formation of District Level Advisory Committee comprise of District Level Officials of Line Department whose role is to facilitate project planning and implementation involving various Line departments. This committee can be used as platform for convergence too.

For the facilitation of the above and regular monitoring of the convergence, an Officer of the Rank of Director, Livelihood & Capacity Development of PMU can be assigned the responsibility. For further detail of convergence schemes with high and medium priorities, see Annex 6.

C4.4.1.5 Registration of JFMCs as a Society and Strengthening

JFM Cell constituted in Forest Headquarters shall monitor the functioning of JFMCs especially those under the Project as per the mandate of the Cell as laid down in the notification; No.F.17(31)/For-Dev/2000-01/MISC/10139-10194 dated on June 18, 2018. As done in JICA assisted TFIPAP, Project shall support registration of JFMCs as Society under the Society Registration Act (1860). The registration will provide them legal status and opportunity to expand their activities beyond forest management and conservation also for socio-economic development. If they are registered as society, they can receive fund independently from other sources.

However, registration is not enough for a JFMC to become a functional and strong society. Therefore, SDMU shall through RMU strengthen the Society through organizing AGM/ GB meeting, Annual Audit, Book Keeping and Accounting System of Society, and also organized awareness programme and training for refreshing the skills of such JFMCs. The Project will also organize orientation on rules and regulations, roles and responsibilities of Governing Board and General members of Society as part of strengthening process. Ideally, the registration of Society will begin after one year of the selection of JFMC in the Project. SDMU will ensure that JFMCs are registered within given time frame, preferably, within the six months from the day of initiation of process. Earlier is registration, more opportunities will be available for strengthening and linking Society for meaningful activities and convergence with other institutions/schemes.

Unless Society is strengthened and continuously engaged in conducting activities, it might become defunct in course of time. Therefore, it is also envisaged that Society shall also motivated to undertake/implement activities related with awareness programs and development in the areas of health, education, business development with financial and technical support from other institutions/departments in due course of time.

C4.4.2 Operationalizing M&E System

Monitoring and Evaluation system shall be introduced by the Project at each level including JFMC level to conduct planning, review the progress and establish and operationalize social audits of works to increase transparency.

a) Annual Planning JFMC/EDC Level

Apo shall be prepared at PMU level. However, the Annual Planning of the JFMC level activities shall be done at JFMC level for the promotion of down to top approach. For each Financial Year, activities shall be discussed planned and budget discussed by RMU involving Beat officers.

Based on the JFMC level planning, PMU, SDMU and RMU shall develop Annual Plan of Operation (APO) for each financial year.

CO and LC shall facilitate and assist RMU and Beat officer in organizing Planning meeting preferable, during January- February so that APO shall be developed before the start of next Financial Year.

Annual Budget of JFMC shall be prepared by compiling various activities included in the Annual Plan/Annual Plan of Operation of the JFMC and respective estimated requirement of funds from all projects/schemes. Budget will be prepared by the JFMC in consultation with all the stakeholders and the President/Member Secretary, based on the approved program/planned items as per micro-plan of JFMC and shall be approved by the GB, following the cost norm prescribed by SCATFORM as the case may be. RMU in charge cum Range Officer and CO with LC will provide assistance in preparation of estimates in respect of technical works. PMU shall issue directives to all DMU to organize such planning in all JFMCs.

b) Annual Statutory Financial Audits for JFMC

As JFMC shall be making expenditure and getting fund from the project for various activities, PMU shall hire auditors and conduct Annual Audit of all the JFMCs involving them in the process. Following will be the indicative scope of the Audit of the JFMC accounts:

- i. To see that the project funds have been used for work for which it was released and prescribed procedures/norms have been followed.
- ii. To examine that the goods and services have been procured as per the agreement(s)/prescribed procedures;
- iii. To examine scrutinize that the necessary supporting documents, records, and accounts have been kept in respect of all expenses.
- iv. To ascertain whether the JFMC accounts have been prepared consistently which provide a clear picture of the financial situation of the JFMC at the year-end.
- v. Scrutinize the SoE furnished to the RMU/Range Office or DMU/SDMU Office with respect to the books of accounts and point out inconsistencies if any.

Submission of Audited Accounts

The annual audited statement of receipt and expenditure of the JFMC shall be placed before the GB for its approval. The audited and approved abstract of annual receipt and expenditure shall be communicated by the Member Secretary with a copy to the SDMU/DMU concerned within 4 months of the closing of the financial year. Suggestions for adjustments based on scrutiny of SoE will be furnished by the JFMC. Audited account shall be countersigned by the President/Chairman of JFMC and Member Secretary and submitted.

c) Social Audits during Annual General Meeting

Social audit shall be conducted during Annual General Meeting of JFMC when large number of people participate to measure, understand, report and ultimately improve an organization's social and ethical performance. COs and FFs shall ensure the participation of people including women and persons with disability, patta holders and landless. In the meeting, the details of the resources, financial and non-financial intervention conducted by the JFMC shall be shared with the people to ensure transparency and accountability. It shall help in improving the efficiency and effectiveness of the governance.

C4.4.3 Phase-Out Activity -JFM

a) Preparation of Sustainability Plan for CBOs (JFMC/EDC/SHG/JLG)

During phase out, sustainability plan shall be prepared for SHGs/JLGs and other community-based organizations such as JFMC/EDC/SHG/JLG and introduced well before the closure of the project. It is proposed to plan phase out 2 years prior to the closure of project. The plan shall be made in three phases. The sustainability plan for the first batch of JFMCs/EDCs/SHGs/JLGs shall be made during 5th year, for the Second batch of JFMCs/SHGs/JLGs in the 6th year and for the Third batch of JFMCs/SHGs/JLGs in the 7th year of the project implementation. Based on the plan project will create awareness on the process

and plan, establish linkages with financial and other institutions, ensure that CBO institution become strong enough to manage administration and finance, have financial viability. Month wise target for sustainability intervention shall be planned, applied and monitored by RMU with assistance from COs and LCs and FFs.

Additionally, sustainability fund shall be created with the amount of INR. 50,000 per JFMC/EDC with additional contribution of at least INR. 5,000 mobilized from beneficiaries. Such fund shall be transferred based on the approval of sustainability plan. It shall be utilized its interest only for the maintenance of assets such as plantation, check dams, Multi Utility Centre, revising Micro Plan, etc. In order to supplement further enhancement of financial sustainability, credit rating of JFMC/EDC by PMU in consultation with banks for linking them to banks shall be considered by the end of the Project to take care of their assets.

b) Transfer of Assets and Resources

Before transfer of assets and resources, maintenance plan will be developed and introduced, besides manual for procedures for transfer and mechanism for its maintenance and integrated the same with the TFD.

c) Revisiting and Revising Micro Plans

Micro Plans shall be revisited by TFD after phase out and if required revised for financial and technical input for activities to be implemented. Since there will not be any funding support, the money available with revolving fund of JFMC/SHG/JLG can be utilized. However, it is required that JFMC/SHGs/JLGs are linked with financial institutions and other schemes for sustaining financial needs on continuous basis.

Component 5. Consulting Services

C5.1 Project Management Consultants (PMC) Operations

a) Provision of Technical and Managerial Advisory Services

PMU of SCATFORM will utilize the service of PMC to import important and advanced knowledge and skills into project stakeholders from external human resources and to maximize implementation efficiency by outsourcing part of project activities. For further detail, see Terms of Reference for the Consulting Services in Attachment 04.