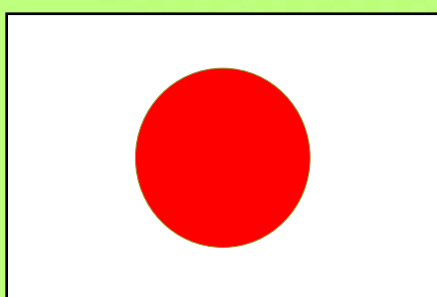


Minutes of Discussions
for
The Project for Forest and Biodiversity Conservation for
Climate Change Response in West Bengal
between
Japan International Cooperation Agency and
Department of Forests, Government of West Bengal (WBFD)



Funded by Japanese ODA Loan as a
Token of Friendship and Cooperation
between
Japan and India
(Completion Year: 2031)



(Volume-I)

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for
The Project for Forest and Biodiversity Conservation for Climate Change Response in West Bengal
between
Japan International Cooperation Agency
and
Department of Forests, Government of West Bengal (WBFD)

Date: December 27, 2022

Venue: New Delhi, India

The Japan International Cooperation Agency mission (hereinafter referred to as “JICA mission”) comprising of Ms. SASAKI Hirari (Country Officer, South Asia Department), Mr. SAITO Keisuke (Assistant Director, Office for Loan Project Technical Examination, Infrastructure Engineering Department, and Natural Environment Team 1, Forestry and Nature Conservation Group, Global Environment Department), and Mr. Vineet Sarin (Chief Development Specialist, JICA India Office) had discussions with the officials of the Department of Forests, Government of West Bengal (hereinafter referred to as “WBFD”) in order to study the feasibility of the Project for Forestry and Biodiversity Conservation for Climate Change Response in West Bengal (hereinafter referred to as “the Project”).

The JICA mission and WBFD confirmed that nothing in present Minutes of Discussions should be understood as implying a commitment of JICA to extend a technical cooperation, loan and/or grant. Both sides further confirmed that the contents of this Minutes of Discussions are confidential and should not be disclosed to any party other than JICA, the Government of Japan (hereinafter referred to as “GOJ”), and the Government of India (hereinafter referred to as “GOI”).

The JICA mission and WBFD confirmed that the present Minutes of Discussions constitutes the sole common project document shared by JICA mission and WBFD while several other technical documents are issued by WBFD to meet requirements arising from its internal procedures. It is understood among the JICA mission and WBFD that, should there be discrepancies between the present Minutes of Discussions and those internal documents, the former should override the latter.

The JICA mission and WBFD hereby confirmed the results of their discussions as follows, subject to approval by the competent higher authorities of both sides.

1. The outline of the Project is as described in Annex I (Project Status Report: PSR) attached hereto.
2. The main points discussed are as described in Annex II attached hereto.

WBFD shall be fully responsible for taking all necessary and required coordination with related authorities within the Government of India for realizing the Project.

For
Japan International Cooperation Agency



For

SASAKI Hirari
Country Officer, South Asia Division 1
South Asia Department

For
Government of West Bengal



VIVEK KUMAR IAS
Name Additional Chief Secretary
Forest Department
Title, Division Government of West Bengal
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For
Directorate of Forests,
Government of West Bengal



Name
Title, Division
XX
SOUMITRA DASGUPTA, IFS.
Principal Chief Conservator of Forests
& Head of Forest Force
West Bengal

For
Ministry of Environment, Forest and Climate
Change, Government of India



Name Shivramand S. Tulwar
Title, Division AIG- EAP
XX

Project Status Report
on
The Project for Forest and Biodiversity Conservation for Climate Change Response in West Bengal
(WB-FBCCCR)
Loan Agreement No ID-P311

Organization Information

Borrower	<p><u>Ministry of Finance, Government of India</u></p> <p>Person in Charge Mr. Rajat Kumar Mishra, Additional Secretary <u>(Division) Department of Economic Affairs</u></p> <p>Contacts <u>Address: Room141, North Block, New Delhi-110001</u> <u>Phone/FAX: 011-23094905</u> <u>Email: rk.mishra62@nic.in</u></p>
Executing Agency	<p><u>Department of Forests, Government of West Bengal</u></p> <p>Person in Charge <u>Mr. Soumitra Dasgupta, PCCF and HoFF</u> <u>(Division) Department of Forests, Government of</u> <u>West Bengal</u></p> <p>Contacts <u>Address: Block-LA-10A, 4th Floor, Aranya Bhavan</u> <u>Sector III, Salt Lake, Kolkata - 700 106</u> <u>Phone/FAX: 033-23357751/033-23354462</u> <u>Email: pccfhoff.office-wb@gov.in</u></p>
Guarantor	<p>Person in Charge _____ <u>(Division)</u> _____</p> <p>Contacts <u>Address:</u> _____ <u>Phone/FAX:</u> _____ <u>Email:</u> _____</p>

Outline of Loan Agreement:

Source of Finance	JICA: Not exceeding \ 9,308 mil.
Terms and Conditions	<p>For JICA</p> <p>-Interest Rate: <u>1.50 % p.a.(other than consulting services)</u> <u>0.01 % p.a.(consulting services)</u></p> <p>-Repayment Period: <u>30 years, including 10 years of grace period (other than consulting</u> <u>services)</u> <u>30 years, including 10 years of grace period (consulting services)</u></p> <p>-Tying Status <u>Untied</u></p>

1: Project Description (Relevance, Coherence)

1-1 Project Objective

Original:*(P/M)*

To mitigate and adapt to climate change, conserve and restore ecosystems by ecosystem based climate change measures, biodiversity conservation and restoration, livelihood improvement activities and institutional strengthening, thereby contributing to sustainable socio-economic development in West Bengal.

Modified objective and its reason(s):*(P/R and PCR)*

1-2 Necessity and Priority of the Project

- Consistency with development policy, sector plan, national/regional development plans and demand of target group and the recipient country and JICA/ Japanese development policy.

Original: *(P/M)*

National Policy

India's 85 percent of national land is high vulnerable to multiple natural disasters including cyclones, floods and sediment disasters due to climate change and these grow into a serious problem. Under the circumstances, the Government of India (GoI) is pursuing policies below and measures to mitigate the problems of climate change and conserve forest and biodiversity.

1. In Intended Nationally Determined Contributions (INDC) under the Paris Agreement, GoI has pledged to reduce the emissions intensity of its GDP by 45% of 2005 levels towards 2030.
2. Green India Mission that was launched in 2014, as one of the eight Missions under the National Action Plan on Climate Change. The Mission aims at protecting, restoring and enhancing India's forest cover and responding to Climate Change. One of the objectives of the Mission is to target to improve eco-system services including carbon sequestration and storage, hydrological services and biodiversity as a result of treatment of 10 million ha in 10 years.
3. The National Forest Policy 1988 stipulates that hilly area to maintain 2/3 of the green wash area for disaster prevention and for stabilization of the ecosystem.
4. Draft National Forest Policy in 2018 stipulates that strategic actions especially sustainable forest management will be taken to strengthen forest-based climate change mitigation and adaptation.

Necessity of the Project and State Policy

The state of West Bengal is endowed with long topography and varied flora and fauna from the north contains Himalayan alpine zone also bordering the Kingdom of Bhutan and Nepal, to the southern part with mangrove forests facing the Bay of Bengal. However, the forest cover of the state was 14.64% in 2011 which was lower than its national average 21.05%.

After that, a Japanese ODA loan project entitled the “West Bengal Forest and Biodiversity Conservation Project” was conducted from 2012 and the forest cover has been improved by 18.96% on 2021.

Although there has been improvement, the pressure on forest natural resources and degradation of ecosystems remains strong and forest cover of the state has not achieved either of its national goal (33%) or national average (25%) of 2019 because of the progress of the urbanization, excessive loads on forest resourced brought by local residents’ use of forest products and other resources to earn a living etc.

Furthermore, due to the climate change, frequent and intensifying natural disasters has impacted on the local residents seriously. In Deltaic landscape of coastal area the frequency of giant cyclones has been increasing in the Bay of Bengal, more than 10 million people were harmed in 2020. Also, not only in coastal area, but also in north hill area, many landslide disasters has been detected.

Under these circumstances, the restoration and conservation of forests and biodiversity remains as serious issues in West Bengal and the state of West Bengal expects the forest and biodiversity sector to mitigate and adapt climate change through the restoration and conservation of ecosystems.

The state of the West Bengal is pursuing policies below and measures to mitigate the problems of climate change and conserve forest and biodiversity.

1. In West Bengal State Action Plan on Climate Change (2017-2020), the implementation plans for climate change mitigation and adaptation including restoration and conservation of forest and biodiversity are stipulated.
2. West Bengal State Action Plan on Climate Change for 2020-2025 is under preparation. In this action plan, 9 strategies such as mitigating impacts of landslides, storm surges and fast river run off, study on long term impacts of climate change on forests and its Carbon sequestration potential are proposed.

Attachment(s):

Actual: (P/R,PCR)

Attachment(s):required only when they are revised.

1-3 Coherence of the Project

- Synergistic effect, harmonization, coordination, interconnection with the projects conducted by JICA, other donors or private companies.
- Consistency with global framework (international targets, initiatives, standards, etc)

Original: (P/M)

Coherence of the Project

1. Activities assisted by Japan

Department of Forests, Government of West Bengal (WBFD) implemented forest and biodiversity conservation project in West Bengal from 2012 to 2022 by assistance of JICA (Phase 1). The Project will be implemented partially in continuation of the past interventions with introduction of new methodologies based on the lessons learnt in the past pilot components.

In addition, through the National Workshop, annually hosted in turn by agencies executing Japanese ODA loan projects in the forest sector, and the Sustainable Forest Management and Biodiversity Conservation Training Course for India, good practices and lessons from other projects in India's forest sector and Japanese experience will be used to improve the Project's implementation and methods.

2. Activities assisted by other donors

World Bank assisted in piloting integrated coastal management approach in state of West Bengal from 2010 to 2020. The activities were to include: a) conservation and protection of coastal resources including mangrove and coastal shelterbelt plantation, b) environment and pollution management by completing the sewerage system for Digha to prevent flow of sewage onto the sandy beach, c) livelihood security of coastal communities in Sagar Island.

GIZ has assisted human wildlife conflict mitigation project cooperation with Ministry of Environment, Forest and Climate Change (MoEFCC). Newly developed instruments for the mitigation of human wildlife conflict is applied in Gorumara Wildlife Division and adjoining landscape of West Bengal.

3. With sustainable development goals

The Project will also help achieve some of the Sustainable Development Goals, namely: Goal 1 (eradication of poverty), Goal 5 (achieve gender equality and empower all women and girls), Goal 13 (action against climate change), and Goal 15 (promoting the sustainable use and management of terrestrial ecosystems, and biodiversity conservation).

Attachment(s):

Actual: (P/R,PCR)

Attachment(s):required only when they are revised.

1-4 Rationale of the Project Design

- Timing, scale, technology of the project

Original: (P/M)

The Project aims to mitigate and adapt to climate change, conserve and restore ecosystems and livelihood for sustainable socio-economic development in WB. Scope of work to be implemented under the Project are as per below. The details are in the Attachment 3.

Component 1: Ecosystem Based Climate Change Measures

Component 2: Biodiversity Conservation

Component 3: Livelihood Improvement

Component 4: Institutional Strengthening

The duration of the Project is 8 years, from March 2023 to March 2031 in consideration of capabilities of stakeholders and time required to conduct activities in sustainable manners. The

project activities will be implemented in selected forest Ranges in project target districts. There is no overlap at Forest Range level with other on-going external aided projects.

Effective Utilisation of Phase 1 Assets including Lessons Learnt

One of the main strengths of WBFD is the assets gained from Phase 1 including lessons learnt. The proposed interventions will incorporate the major lessons learnt from Phase 1. These are mostly relevant to the livelihood-related interventions, capacity enhancement of JFMC and SHG, and convergence. Otherwise, the existing institutional set-up of PMU will give a head start to the project implementation.

Utilisation of Proven Package of Practices and Research Products to Project Implementation

Apart from the research products available from Phase 1, there are several research institutes in India and in Japan that are working on 1) climate change adaptation and mitigation; 2) Eco-DRR; 3) human and wildlife conflicts; 4) community resilience and other relevant issues. A number of effective methods are also developed from projects of similar nature. Through collaboration with such institutes and taking advantage of existing and proven methods, this project will gain insights in project implementation.

Implementation Methods that Cater for Diversity and Heterogeneity

West Bengal is diverse in nature and society. From these perspectives, the project implementation method and process need to be developed to cater to the need. In this project, there are two ways to cater for such specificity.

1) Landscape-based Planning and Implementation

Each biogeographical zone experiences different types and level of climate change impacts. Furthermore, when considering interventions for disaster reduction, scattered treatment areas would not be beneficial. As the causes of damages are likely to be complex and a single intervention may not be effective in reducing the damages. In other words, there may also be a need to implement a combination of interventions to be effective in reducing disaster risks and sizable area may need to be treated. Thus, site identification and planning will be done on the basis of watershed, which is severely affected by disaster and forest-based intervention, are seen to be effective. In this way, limited financial resources can be utilised efficiently and effectively.

2) Institutionalising Convergence

The needs of a community are diverse and not all that are listed in the micro plan cannot be implemented by this project or by WBFD. On the other hand, a number of central and state schemes are already implemented. Thus, creating a mechanism and providing initial support for mobilising resources through convergence will be proposed this project. By creating an enabling environment for convergence, the purpose of developing a micro plan will be justified.

3) Developing Financial Mechanism to Cater for Women's Need

Women seeming to move as a homogeneous group is not the reality. Within a village, some women are more enterprising, and others are not. In some locality, giving loan would only result in adding debts to the household if the financial product is not designed well. In this project, a financial institution or an entity, which has a proven track record of managing funds and working with SHGs in enterprise development and livelihood improvement, may be engaged to handle the project fund for the purpose. Otherwise, a separate timebound mechanism shall be proposed for effective utilisation of the fund.

Building Sustainability of the Project Interventions

Sustainability of the project intervention depends on the capacity of the stakeholders who are engaged in implementation. Investment in capacity building will have a direct bearing on sustainability of the project outputs, which ultimately leads to attainment of project impact in the long run. Therefore, the capacity building of the community level institutions will be undertaken in a strategic manner to strengthen their organisational capacity. Furthermore, O&M system of the community infrastructure

will be designed by this project so that the community will be able to take over the assets, by which system will be operationalised during the phase-out period (From the sixth to eighth year of the project).

Phase-wise approach

The Project will be divided into three phases; Preparatory Phase, Implementation Phase, and Phase-Out/Closing Phase.

1) Preparation Phase (1 year)

Preparation Phase is crucial for successful implementation of the Project. The first step would be institutional arrangement by way of setting up Project Management Unit (PMU), Divisional Management Unit (DMU), and Field Management Unit (FMU) and so on, followed by recruitment of contractual staff, preparation of operation manual and other guidelines, orientation and capacity development for WBFD staff in each rank. Project Management Consultant (PMC) shall be deployed in a timely manner. Required surveys and assessments for planning and baseline data for sustainable forest management as well as biodiversity conservation will be conducted during this phase.

2) Implementation Phase (5 years) :

All components in implementation phase will be put into action based on the Preparatory phase.

3) Phase-Out/Closing Phase (2 years) :

After the Implementation phase, Phase-out works will be undertaken for sustainability. The focus would be on evaluating each component in detail to plan and take measures for covering up the backlog and to achieve greater impact and sustainability.

Application of Technologies for Scientific Implementation/Management

The Project shall adopt GIS and the state-of-the-art technologies for better implementation, monitoring and planning of the services of WBFD. For instance;

- Digitisation of JFMC boundary within the project target area.
- Development of web-GIS platform of WBFD.
- Upgrade of mobile application to add function of e-plantation journal.
- Development of project MIS platform linked to web-GIS.
- Pilot project for use of UAV

Actual: (P/R,PCR)

2: Project Implementation (Efficiency)

2-1 Project Scope

Table 2-1-1a: Comparison of Original and Actual Location

Location	<p>Original: (P/M)</p> <p>State of West Bengal</p> <p>18 Districts:</p> <p><u>Hills and North Bengal Landscape</u></p> <ol style="list-style-type: none"> 1. Jalpaiguri 2. Darjeeling 3. Kalimpong 4. Alipurduar 5. Coochbehar 6. North Dinajpur 7. South Dinajpur <p><u>Dry Lateritic & Alluvial Landscape</u></p> <ol style="list-style-type: none"> 8. Murshidabad 9. Birbhum 10. Purulia 11. Paschim Medinipur 12. Bankura 13. Purba Bardhaman 14. Jhargram 15. Paschim Bardhaman 16. Nadia 17. North 24 Parganas <p><u>Deltaic Landscape</u></p> <ol style="list-style-type: none"> 18. South 24 Parganas <p>34 Divisions:</p> <p><u>Hills and North Bengal Landscape</u></p> <ol style="list-style-type: none"> 1. Jalpaiguri 2. Baikunthapur 3. Kurseong 4. Darjeeling 5. Kalimpong 6. Darjeeling WL 7. Gorumara WL 8. Jaldapara WL 9. Buxa Tiger Reserve (BTR) (East) 10. Buxa Tiger Reserve (BTR) (West) 11. Cooch Behar <p><u>Dry Lateritic & Alluvial Landscape</u></p> <ol style="list-style-type: none"> 12. Nadia-Murshidabad 13. Birbhum 14. Purulia 15. Kangsabati (North) 16. Kangsabati (South) 17. Jhargram 18. Medinipur 19. Rupnarayan 	<p>Actual: (P/Rand PCR)</p> <p>Attachment(s):Map</p>
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	20. Bankura (South) 21. Bankura (North) 22. Panchet 23. Burdwan 24. Durgapur 25. Kharagpur 26. Raiganj SF 27. North 24 Parganas <u>Deltaic Landscape</u> 28. South 24 Parganas 29. Sunderban Tiger Reserve (STR) <u>Functional Divisions</u> 30. Silviculture (Hills) 31. Silviculture (North) 32. Monitoring (North) 33. Monitoring (South) 34. Purulia Extension Forestry As shown in Location Map 90 Ranges Attachment 1 : Location Map Attachment 2 : Selection Criteria	
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Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
Component 1 : Ecosystem based Climate Change Measures		
1.1.1 Production of Quality Planting Material (QPM)	-	<i>(P/R and PCR)</i>
1.1.1.1 Upgrading Central Nurseries and Maintenance	9 units	
1.1.1.2 Production of Quality Planting Material (QPM)	1,925,000 QPMs	
1.1.2 Improving Quality of Forests	-	
1.1.2.1 Creation of New Seed Production Areas (SPAs) and Maintenance	50 ha	
1.1.2.2 Preparation of Range Forest Project Implementation Plan (RFIP)	90 plans for 1.1.2.2 & 1.2.2.1	
1.1.2.3 Plantation in Degraded Forest Areas		
1) Sal Plantation	100 ha	
2) Miscellaneous Plantation	250 ha	
1.1.2.4 Tree Plantation Outside of Forest Areas (TPOFA)	250 ha	

1.1.3 Ecosystem-based Disaster Risk Reduction (Eco DRR) Activities	-	
1.1.3.1 Embankment Protection	-	
1) Large Check dams	1 unit	
2) Medium Check dams	15 units	
3) Small Check Dams	20 units	
4) Glass Planting along the outlet (Large)	5 ha	
5) Glass Planting along the outlet (Medium)	45 ha	
6) Glass Planting along the outlet (Small)	40 ha	
7) Bunding along the embankments (for large check dams)	2 km	
1.1.4 Green Laboratory Initiatives	-	
1.1.4.1 Nature Study in Forests Areas by Students	15 students	
1.1.4.2 Nature and Forests Programme Engaging Education/Research Institutions	5 programs	
1.2.1 Production of Quality Planting Material	-	
1.2.1.1 Upgrading Central Nurseries and Maintenance	31 units	
1.2.1.2 Production of Quality Planting Material (QPM)	4,004,000 QPMs	
1.2.2 Improving Quality of Forests	-	
1.2.2.1 Preparation of Range Forest Project Implementation Plan (RFIP)	90 plans for 1.1.2.2 & 1.2.2.1	
1.2.2.2 Assisted Natural Regeneration (ANR) of degraded sal forests (RDF) (Coppicing)	1,000 ha	
1.2.2.3 Plantation in degraded forest areas		
1) Sal Plantation	400 ha	
2) Miscellaneous Plantation	1,600 ha	
1.2.2.4 Tree Plantation Outside of Forest Areas (TPOFA)	250 ha	
1.2.3 Ecosystem-based Disaster Risk Reduction (Eco DRR) Activities	-	
1.2.3.1 Preparation of Catchment Treatment (CAT) Plans and site identification	13 CAT plans	
1.2.3.2 Soil and Moisture Conservation Measures	1,000 ha	
1.2.4 Green Laboratory Initiatives	-	
1.2.4.1 Nature Study in Forests Areas by Students	20 students	
1.3.1 Community Resilience Measures in Sundarbans	-	
1.3.1.1 Preparatory Works including Site Selection	9 villages	

1.3.1.2 & 1.3.1.3 Preparation of Designs of Mangrove Restoration with Traditional Defence Measures and Implementation of Pilot Activities 1) Porcupine structure 2) Permeable dam 3) Survey, Earth Work and Vetiver/Mangrove dibbling	12,150 sq m 8,100 m 12,150 sq m	
1.3.1.4 Evaluation of Pilot Activities	1 evaluation	
1.3.1.5 Preparation of Plan to Install of Enhanced Models	9 villages	
1.3.1.6 Installation of Enhanced Restoration Models	9 villages	
1.3.2 Green Laboratory Initiatives	-	
1.3.2.1 Nature Study in Forest Areas by Students	15 students	
1.3.2.2 Nature and Forests Programme engaging Education/ Research Institutions	5 programs	
Component 2: Biodiversity Conservation and Restoration		
2.1.1 Human-Wildlife Conflict Mitigation	-	
2.1.1.1 Stress induced Conflict Risk Reduction by Wild Animals (solar-energised fencing)	40 km	
2.1.1.2 Support Communities for Human-Wildlife Mitigation (torches, lights, and other mitigation measures, awareness generation and publicity)	40 units	
2.1.1.3 Pilot (Eco Sensitive Zone (ESZ)) Plantation with Non-palatable/Repulsive Species	20 ha	
2.1.2 Species Conservation Programme	-	
2.1.2.1 Species Recovery Programme for Local RET (North)	50 ha	
2.1.3 Studies on Wild Animals and their Behaviour	-	
2.1.3.1 Study on 5 spp. of Lesser Cats in North Bengal	1 study	
2.2.1 Biodiversity Conservation through People's Participation in Protected Area	-	
2.2.1.1 Bethuadahari WLS	Lumpsum	
2.2.1.2 Ballvpur WLS	Lumpsum	
2.2.2 Conservation for Smaller Mammals	-	
2.2.2.1 Habitat Improvement	25 ponds	
2.2.2.2 Conservation Awareness Generation	4,000 meetings	
2.2.3 Human-Wildlife Conflict Mitigation	-	

2.2.3.1 Rescue Centre for Elephants including Study of their Behavior	1 centre	
2.2.3.2 Stress-induced Conflict Risk Reduction by Wild Animals (torches, lights, and other mitigation measures)	415 units	
2.2.3.3 Tracking of elephant route through radio collaring	10 units	
2.2.3.4 Enhancement of tranquilizer equipment for wild animals to be kept in Airavat vans	10 units	
2.2.3.5 Installation of Early Warning System (EWS) for Wild Elephants	200 units	
2.2.3.6 Development of software application for compensation for depredation by wild animals	Lumpsum	
2.2.3.7 Installation of Elephant Proof Trench (EPT)	95.36 km	
2.2.4 Species conservation programme	-	
2.2.4.1 Dolphin Conservation Programme	1 study	
2.2.4.2 Breeding and Releasing of Indian Pangolin	1 study	
2.2.4.3 Breeding and Releasing of Fishing Cat	1 study	
2.2.4.4 Breeding and Releasing of Indian Vulture	1 study	
2.2.4.5 Species Recovery Programme for Local RET (South)	25 ha	
2.3.1 Biodiversity Conservation through People's Participation in Protected Area	-	
2.3.1.1 Chintamani Kar Bird Sanctuary (CKBS)	Lumpsum	
2.3.1.2 Bibhutibhushan WLS	Lumpsum	
2.3.2 Human-Wildlife Conflict Mitigation	-	
2.3.2.1 Stress Induced Conflict Risk Reduction by Wild Animals (steel-reinforced nylon nets)	84 km	
2.3.2.2 Veterinary Facility in Sundarbans	1 facility	
2.3.3 Studies on Wild Animals and their Behaviour	-	
2.3.3.1 Assessment of Aquatic Biodiversity in Sundarbans and Territorial Waters	1 study	
2.3.3.2 Studies Suggested by Central Asian Flyway	1 study	
Component 3: Livelihood Improvement		
3.0 Preparatory Works (All Landscapes)	7 guidelines/manuals (including gender guideline)	
3.1.1, 3.2.1, 3.3.1 Preparatory Activities for JFMCs	-	
3.1.1.1, 3.2.1.1, 3.3.1.1 Community Mobilisation	600 JFMCs	

3.1.1.2, 3.2.1.2, 3.3.1.2 Reorganisation/ Reconstitution of JFMCs and Confirmation of Demarcation of JFMC Boundary	600 JFMCs	
3.1.1.3, 3.2.1.3, 3.3.1.3 Familiarisation of Project to JFMC	600 JFMCs	
3.1.1.4, 3.2.1.4, 3.3.1.4 Micro Planning	600 JFMCs	
3.1.1.5, 3.2.1.5, 3.3.1.5 Entry Pointe Activity (EPA)/ Community Development Activities (CDA)	600 JFMCs	
3.1.2, 3.2.2, 3.3.2 Support for Income Generation	1,200 SHGs	
3.1.3, 3.2.3 Support for Community Well Being (Local Traditional Healers)	3.1.3 : 22 FMUs 3.2.3 : 57 FMUs	
3.1.4, 3.2.4, 3.3.4 Support for Community Mobilising (Extension Workers)	120 EWs	
Component 4: Institutional Strengthening		
4.1 Strengthening Project Management	-	
4.1.1 Capacity Development on MIS/DX	-	
4.1.1.1 Digitisation of JFMC boundary	600 JFMCs	
4.1.1.2 Development of web-GIS platform of WBFD	1 unit	
4.1.1.3 Upgrade of mobile application (e-monitoring) to add function of e-plantation journal	1 unit	
4.1.1.4 Development of project MIS platform linked to web-GIS.	1 unit	
4.1.1.5 Training of filed officers (range/ beat officers) in the target area on the operation of GPS and mobile application.	1/range in the target area	
4.1.1.6 Training of DMUs/FMUs on the operation of MIS and mobile application	1/DMU	
4.1.1.7 Site Verification 1) On-site verification of JFMC boundary digitisation. 2) Inspection of plantation work. 3) Boundary pillar setting	60 JFMCs 500 ha Lumpsum	
4.1.1.8 Pilot Project for Use of UAV for Development of Technical Guidelines.	1 unit	
4.1.2 Mobility	-	
1) Cars	30 units	
2) Motorcycles	85 units	
3) Airavat Van (Truck)	4 units	

4) Speed boats for STR	7 units	
4.1.3 Building	-	
1) PMU building	1 unit	
2) CCF Offices	1 unit	
3) Range Office Complex	25 units	
4.1.4 Project Contractual Staff	-	
1) PMU	21 staffs	
2) DMU	120 staffs	
3) FMU	255 staffs	
4.1.5 Digital Strengthening	Lumpsum	
4.2 Capacity Development	-	
4.2.1 Training Plan based on Training Needs Assessment (TNA)	1 plan	
4.2.2 Trainings of Forest Officers (DCF and above ranks)	-	
1) Specialized Trainings - 20 batches (size 20; one week)	400 persons	
2) Exposure Trips – 10 batches (size 12; one week)	120 persons	
3) International Training – 3 batches (size 12; 2 weeks)	36 persons	
4.2.3 Training of Forest Officers/ Frontline Staff (Ranger and below ranks)	-	
1) Specialized Trainings - 30 batches (size 20; 7-15 days)	600 persons	
2) Exposure Trips – 10 batches (size 20; 10 days)	200 persons	
3) International Training (Regional) – 5 batches (size 15; 2 weeks)	75 persons	
4.2.4 National Workshop	70 participants	
4.2.5 Trainings for JFMC/SHF members	-	
1) JFMC members – 120 batches (size 20; 5 days)	2,400 persons	
2) SHG members – 90 batches (size 20; 5 days)	1,800 persons	
4.3 Monitoring and Evaluation	-	
4.3.1 Progress Monitoring	-	
4.3.1.1 Biodiversity Monitoring	4 monitorings	
4.3.1.2 Concurrent Monitoring & Periodic Review	32 quarterlies	
4.3.1.3 Community Self-monitoring	32 quarterlies	
4.3.1.4 Computerized MIS & GIS/applications/ UAV for monitoring	Lumpsum	

4.3.1.5 Computerized Accounting System	30 DMUs	
4.3.1.6 Annual Strategy Planning & Review Workshops	8 Annuals	
4.3.2 Impact Evaluation	-	
4.3.2.1 Annual Outcome Assessments	7 annuals	
4.3.2.2 Baseline and Impact Surveys	3 surveys	
4.3.2.3 Thematic and Short Studies	10 studies	
4.3.2.4 Environmental Impact Assessment (if necessary)	1 assessment	
4.3.3 Audits	8 annuals	
4.4 Strengthening Forest Research	1 unit	
4.5 Publicity and Publication	-	
4.5.1 Project Website	1 website	
4.5.2 Guidelines, Manual and Annual Reports	8 guidelines/manuals (including gender guideline and monitoring manual)	
4.5.3 Short Films/ Digital Documentation	Lumpsum	
4.5.4 Knowledge Material	Lumpsum	
4.5.5 “Proof of Concept” (PoC) activities for several digital technology/ innovation	Lumpsum	
Project Management Consultant (PMC)	-	
Pro A Consultant	18 P/M	
Pro B Consultant	107 P/M	

Attachment 3: Detailed Scope of Work

Attachment 4: Terms of Reference for Consulting Services

2-1-2 Reason(s) for the modification if there have been any.

(P/R and PCR)

2-2 Implementation Schedule

Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original	Actual
-------	----------	--------

Signing Loan Agreement	March 2023	<i>(P/R,PCR)</i> As of (Date of Revision) Please state not only the most updated schedule but also other past revisions chronologically.
Effectuation of Loan Agreement	July 2023	
Procurement of Consultant	February –December 2023	
Consulting Services	December 23 – March 2030	
Establishment of PMU/DMU/FMU	April – June 2023	
Procurement of Staff and deployment	April 2023 – April 2024	
Preparation of Reports, Guidelines & Manuals	April 2023 – April 2024	
Component 1 Ecosystem-based Climate Change Measures	May 2023 – February 2031	
Component 2 Biodiversity Conservation and Restoration	April 2023 – September 2029	
Component 3 Livelihood Improvement	July 2023 – March 2030	
Component 4 Institutional Strengthening	April 2023 – March 2031	
Project Completion*	March 2031	
Termination of Loan period	July 2033	

*Project Completion was defined as the date by when activities of the Project shall be completed in totality at the time of L/A.

Attachment 5: Detailed Implementation Schedule

Attachment 23: Time Bound Action Plan

2-2-2 Reasons for any changes of the schedule, and their effects on the project.

(P/R and PCR)

2-3 Project Cost

2-3-1

Table 2-3-1a: Comparison of Original and Actual Cost BY ITEM

Unit: (million ¥)

Breakdown of Cost	Original								
	Foreign Currency Portion			Local Currency Portion			Total		
	Total	JICA Portion	Others	Total	JICA Portion	Others	Total	JICA Portion	Others
1. Ecosystem Based Climate Change Measures	0	0	0	1,886	1,886	0	1,886	1,886	0
2. Biodiversity Conservation and Restoration	0	0	0	1,870	1,870	0	1,870	1,870	0
3. Livelihood Improvement	0	0	0	1,355	1,355	0	1,355	1,355	0
4. Institutional Strengthening	0	0	0	1,924	1,924	0	1,924	1,924	0
Sub Total	0	0	0	7,035	7,035	0	7,035	7,035	0
Price Escalation	0	0	0	1,478	1,478	0	1,478	1,478	0
Physical Contingency	0	0	0	426	426	0	426	426	0
Consulting Services	96	96	0	273	273	0	369	369	0
Interest during Construction	613	0	613	0	0	0	613	0	613
Front End Fee	19	0	19	0	0	0	19	0	19
Land Acquisition	0	0	0	0	0	0	0	0	0
Administration Cost	0	0	0	765	0	765	765	0	765
VAT	0	0	0	931	0	931	931	0	931
Import Tax	0	0	0	0	0	0	0	0	0

Other Taxes	0	0	0	0	0	0	0	0	0
Total	727	96	631	10,907	9,212	1,696	11,634	9,308	2,327

(Note) Exchange Rate: US\$1=INR 82.3 =\ 147 (INR 1=\ 1.79)

Base Year for Cost Estimation: November 2022

Unit: (million \)

Breakdown of Cost	Actual								
	Foreign Currency Portion			Local Currency Portion			Total		
	Total	JICA Portion	Others	Total(JICA Portion	Others	Total	JICA Portion	Others
Item	()	()	()	()	()	()	()	()	()
(P/R,PCR)									
Total									

(Note) Exchange Rate: US\$1=INR =\ (INR 1=\)

Base Year for Cost Estimation:

Table 2-3-1b: Comparison of Original and Actual Cost BY YEAR

*Fiscal Year starting in 2023 and ending in 2031

Unit: (million \)

Breakdown of Cost	Original			Actual		
	JICA Portion	Others	Total	JICA Portion	Others	Total
2023	1,013	218	1,231	()	()	()
2024	1,176	246	1,422			
2025	1,229	273	1,502			
2026	1,274	299	1,573			
2027	1,318	326	1,644			
2028	1,377	357	1,734			
2029	1,232	348	1,580			
2030	689	260	948			
Total	9,308	2,327	1,1634			

Note: Exchange Rate used: US\$1 = INR 82.3 = \ 147 (INR 1 = \ 1.79)

You can use any currencies in this chart, i.e. you may use your local currency as well as Yen for each figure.

If there were the portion of the financial resources such as of World Bank, ADB and so forth, other than your own budget, please fill in another column between “JICA Portion” and “Others” and fill in the figures of them

Attachment 6: Annual Fund Requirement

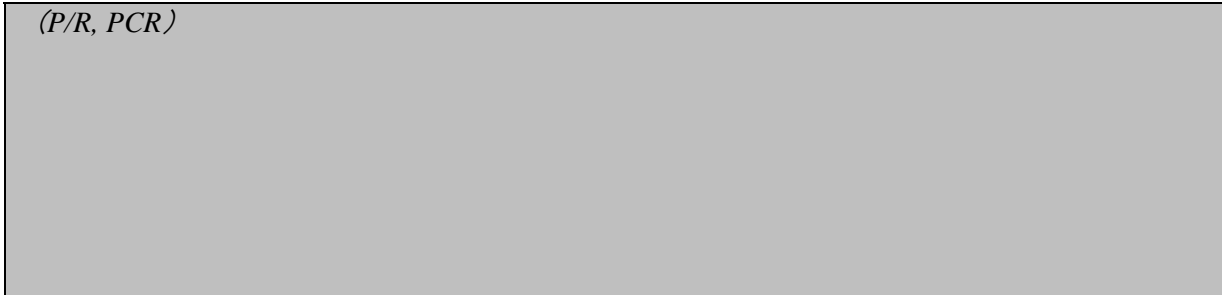
Attachment 7: Cost Breakdown

Attachment 8: Cost Breakdown for Project Management Consulting

Attachment 9: Manning Schedule for the Consulting Services

2-3-2 Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.

(P/R, PCR)



2-4 Organizations for Implementation

2-4-1 Executing Agency:

- Organization’s role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original: (P/M)

Executing Agency

Department of Forests, Government of West Bengal (WBFD)

Organization's Role

WBFD was established by the State Government, with the vision & mission for the development, conservation and management of Forest, Tree growth, wildlife habitat etc. on sustainable basis for present and future generation, by planning, executing, coordinating and monitoring the implementation of Forestry and Wildlife conservation programmes.

High-Power Committee (HPC)

HPC for the project will be freshly constituted and established within the state government prior to the initiation of the project implementation. HPC will act as the highest decision-making body for policies, inter-departmental coordination, and convergence for the project. HPC will remain outside the autonomous structure of the society and will support and guide the project at the state level.

The Additional Chief Secretary Forests/ Principal Secretary Forests will chair HPC meetings, while secretaries and heads of line departments will be members to the committee, whereas the Chief Project Director (CPD) will be the Member-Secretary. As per the current responsibilities within the state government, the composition of HPC is given in the following table.

Governing Body (GB)

GB will be reconstituted and will be the decision-making bodies for the project within the autonomous society, PMU, as per the provisions in the Societies Registration Act applicable in West Bengal. GB will be the highest decision-making body within the society.

Project Management Unit (PMU)

The project will be implemented through the PMU that was established during Phase 1 as an autonomous registered society within WBFD. PMU will be made responsible to manage, coordinate, implement, and monitor the project activities. All offices created for the new project will exclusively work to assist and facilitate the implementation of the project activities following the project implementation schedule, annual plan of operations, and envisaged processes adopting an Operation Manual. PMU will have a comprehensive Operational Manual that will prescribe guidelines, policies, protocols, procedures and rules on finance, accounting, administration, and management for smooth implementation of the Project.

Divisional Management Unit (DMU)

DMU will be established at the divisional level and will function as the dedicated and extended unit of PMU for planning and implementation of the project activities, and as a part of the autonomous society, i.e., PMU. DMU will be headed by a Divisional Forest Officer (DFO) who is in the rank of DCF in the Forest Department. S/he would be an ex-officio in-charge of DMU and will be designated as DMU Head and would oversee the project in addition to the regular department functions and responsibilities. S/he will facilitate project implementation at the divisional level and will also extend all technical inputs and guidance to FMUs within their jurisdiction and at field level on a day-to-day

basis. DMU will be responsible for supervising and guiding the works carried out by specialised agencies/ resource organisations or NGOs.

DMU Head will coordinate with the district administration for inter-sectoral convergence, organise and participate in DPC meetings at the district level, and extend support for preparing annual plans, estimates etc. DMU Head will also monitor, supervise, and follow-up with the subordinate offices, and provide guidance on documentation and reporting the physical and financial progress. DMU office will be guided by the project Operation Manual as well as PMU.

Field Management Unit (FMU)

FMU will be created as an extended arm of DMU and as a part of PMU. FMU will be headed by a Range Officer (RO) in the rank of forest ranger/ Deputy Ranger Forester in the Forest Department. S/he would be ex-officio in-charge of FMU and will be designated as FMU Head and would oversee the project in addition to the regular department functions and responsibilities.

S/he will facilitate project implementation at the range level and will also extend all technical inputs and guidance to Beat Officers within their jurisdiction and at field level on day-to-day basis. FMU Head will be responsible for supervising and guiding the works carried out by the Beat Officers as well as JFMCs and facilitate convergence at the block level. The structure of FMU is given in the figure below.

Village-Level Implementation Organization (JFMCs and SHGs)

The village level institutions (JFMCs) will be involved during community mobilisation and micro planning processes and will be shared with project information to build rapport, and bring in more synergy, ownership, and transparency in project operations.

Also, JFMCs identified in project areas will be engaged to execute JFM as well as livelihood interventions. The project will provide a one-time grant to JFMCs to support SHGs for income generation. In addition to NGOs/ resource organisations, JFMCs will facilitate to identify a local person who can qualify to act as extension worker as specified for the project. S/he will be guided by the project teams to handhold and extend support to these community institutions for project implementation and reporting.

Actual, if changed: *(P/R and PCR)*

Attachment 10: Institutional Arrangement

2-4-2 Contractor(s)/ Supplier(s), and Consultant(s) and Their Performance:

2-4-2-1 Procurement and Consultant

Table 2-4-2: Procurement of Contractor(s)/Supplier(s) and Consultant(s)

Contract Package	Selection Method	
	Original: <i>(P/M)</i>	Actual: <i>(P/R and PCR)</i>
Contractor(s)	-The works for infrastructure and mobility will be procured by Local Competitive Bidding (LCB). -Studies on wild animals and their behavior will be procured by LCB or	

	<p>direct contract basis or by Memorandum of Undertaking (MOU).</p> <p>-Nature And Forests Programme Engaging Education/ Research Institutions will be established and implemented by Memorandum of Undertaking (MOU)</p> <p>-Statutory Audits will be procured by LCB.</p> <p>-Extension Worker will be procured by Direct Undertaking (DU).</p> <p>-Other works will be implemented by WBFD/PMU/DMU/FMU/Circles/JFM Cs/SHGs/West Bengal Zoo Authority/Other Stakeholders.</p>	
Technical Assistance	<p>-NGOs will be selected and contracted by LCB.</p> <p>-Micro Finance Support Agency will be procured by LCB/ MoU.</p>	
Supplier(s)	LCB or direct contract basis or price quotation.	
Consultant(s) -Project Management Consultant	International competitive bidding (ICB) with short-list method for selecting Project Management Consultant	

Attachment 11: Principles of Procurement

Attachment 12: Procurement and Implementation Method

2-4-2-2 Performance

(P/R and PCR)

Information on the Contractor(s)/ Supplier(s):

Evaluation:

<p>Information on the Consultant(s):</p> <p>Evaluation:</p>
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2-5 Precautions (Measures To Be Adopted/Points Which Require Special Attention)

- Risks and issues, if any, which may affect the project implementation and planned countermeasures to be adapted, in terms of physical, environmental or social aspects.(e.g., land acquisition, resettlement , HIV awareness and prevention program, gender consideration and EIA clearance)
- Environmental Checklist or report of monitoring indicator (if applicable)

Original issues and Countermeasure(s)	Actual issues and Countermeasure(s)
<p><i>(P/M)</i></p> <ul style="list-style-type: none"> ➤ When the project operation is conducted in the area, which requires Protected Area Permit, or when JICA personnel passes through such area, the procedure agreed in Main Points Discussed as per Annex II shall be taken. ➤ Any project activities shall be initiated after finalization of Project Operation Manual and Guidelines in order to avoid confusion in project operations. ➤ PMU shall finalize the selection criteria for Mode selection and monitoring methods under Departmental Mode as practiced. ➤ Original (baseline data) of Qualitative and Quantitative Data of Monitoring Indicators shall be reviewed based on Micro Plan and baseline survey and updated if necessary and reported to JICA along with their target to be set. ➤ Significant adverse environmental and social impacts such as land acquisition, resettlement which require EIA clearance are not anticipated from the Project intervention. The Environmental and Social Management System for the Project to be implemented will be established and monitored by Environmental and Social Assessment Framework and Vulnerable Scheduled Tribes Planning Framework. DMU shall work on categorization of the Project activities in each sub project when they approve the Micro Plan. Category B activities shall be reported through monitoring from DMU to PMU, and then to JICA. 	<p><i>(P/R and PCR)</i></p>

- Attachment 13: Environmental Checklist**
- Attachment 14: Definition of Environmental Categorization**
- Attachment 15: Outline of Annual Environmental and Social Performance Report to JICA**
- Attachment 16: Environmental and Social Management System (ESMS) Checklist**
- Attachment 17: Environment and Social Management System Assessment Framework**
- Attachment 18: Vulnerable Scheduled Tribes Planning Framework**
- Attachment 19: Environmental and Social Compliance Monitoring Form**

2-6 Photographs of Output of the project (P/R and PCR):Attachment

3: Benefit Derived from the Project (Effectiveness, Impact)

3-1 Operational and physical condition of each facility developed/supplied by the project.

Facilities	Description of condition	Problems, its Background and Remedial Action Plan
<i>(P/R and PCR)</i>	<i>(P/R and PCR)</i>	<i>(P/R and PCR)</i>

3-2 Precautions (Measures To Be Adopted/Points Which Require Special Attention)

- Risks and issues, if any, which may affect the project outcome and planned countermeasures to be adapted, in terms of physical, environmental or social aspects.
- Environmental Checklist or report of monitoring indicator (if applicable)

Original issues and Countermeasure(s)	Actual issues and Countermeasure(s)
<ul style="list-style-type: none"> ➤ Capacity Risk and its countermeasures; <ol style="list-style-type: none"> 1) The project will focus on strengthening the institutional capacity. The project will implement capacity development strategy and annual training calendar for the project staff. If required, the project may acquire necessary skills and expertise from the market 2) Project Operation Manual and Accounting Rules/ guidelines will be developed and adopted during the first year of operation. 3) PMU with technical assistance from the PMC will <ol style="list-style-type: none"> i) prepare the project implementation guidelines ii) organise orientation and guidance workshops/ seminars for information dissemination amongst stakeholders iii) provide training to the project staff to enable them to operate and manage the project as envisaged iv) continuously provide technical and managerial support. ➤ Risk of Financial Capacity and Arrangements, its countermeasures; <ol style="list-style-type: none"> 1) Annual budgetary flows for the project to be ensured by the state government under the Loan Agreement. If the annual budget releases are not possible, the government may consider providing upfront revolving fund to the project. 2) PMU/ WBFD proactively approach the state government for release of budgets on time every year and must obtain timely 	<i>(P/R and PCR)</i>

approval of the annual budgets and annual plans from HPSC and GB prior to the start of each fiscal year.	
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Attachment 32: Risk Management Framework

3-3 Environmental and Social Impacts

- Major environmental and social impacts have occurred during project implementation (e.g. involuntary resettlement, poverty reduction, systems and norms, people’s well-being, human rights, natural environment,)

Issue(s)	Action or countermeasure(s) taken and remaining problem(s)
<i>(PCR)</i>	<i>(PCR)</i>

3-4 Gender Mainstreaming

- Plan, Progress and impact on gender related activities during project implementation.
- This item should be filled in if the project is categorized by JICA as ‘Gender Equality Project’, ‘Project Targeting Women’ (GIP: Gender Informed Principle), or ‘Gender Integrated Projects’ (GIS: Gender Informed Significant).

Original gender related activities	Actual gender related activities, issues and Countermeasure(s)
<p>WBFD shall develop guidelines for Gender Mainstreaming during the Preparatory phase. Appropriate gender training shall also be proposed for all levels of project implementation units and stakeholders. The gender monitoring system shall also be institutionalized.</p> <p>Activities and monitoring indicators of consideration measures/targets/measures for consideration are described in the Attachment 30 “Gender Action Plan”.</p>	<i>(P/R and PCR)</i>

Attachment 30: Gender Action Plan

3-5 Qualitative and Quantitative Data of Monitoring Indicators

- Operation and Effect Indicator, EIRR and/or FIRR
- Supporting data for computing EIRR and/or FIRR.

Indicators	Original (Yr 2022)	Present (Yr)	Target (Yr 2033) *two years after completion of the project
New plantation area by the project (ha)	-		3,900
Increase of carbon sequestration by the project (CO2t)	-		75,470
Survival rate of plantation (%) ① Plantation in Recorded Forest Area ② TPOFA	① 75-80% ② 65-70%		① 80% ② More than 70%
Reduction in soil erosion levels at treatment sites of the project in Dry Lateritic and Alluvial Landscape (%)	*1		*1
Number of incidents of village flooding in targeted villages in Deltaic Landscape	*2		*2
Number of villages covered by Eco-DRR Measures	-		*1
Percentage reduction in Human-Wildlife Conflict in the project intervention area (in terms of occurrences) (%)	-		10-20%
Number of endangered wild animal species to be protected by the project	-		5
Number of JFMCs supported and covered by livelihood improvement activity of the project	-		600
Number of SHGs supported for income generation	-		1,200
Annual profit earned per income generation activity under the project per SHG member	-		*3
Number of Forest Officers & Staffs trained (gender-segregated) by the project	-		Men: 1,746 Women: 430
Number of JFMC members trained (gender-segregated) by the project	-		Men: 1,680 Women: 720
Number of SHG members trained (gender-segregated) by the project			Men: 18 Women: 1,782
EIRR			10.5%

Qualitative effects: Sustainable socio-economic development in West Bengal, Restoration and enhancement of ecosystem services, Enhancement against Climate Change resilience, Climate Change mitigation and adaptation, Participation of women and vulnerable community in the society

*1: After the preparation of CAT plan

*2: At the time of Preparatory Works including site selection

*3: At the Base Line Survey

Attachment 21: EIRR Calculation

3-6 Monitoring Plan for the indicators

- Monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term and so forth.

Original: (P/M and PCR)

- (1) Monthly Reporting by Project Village to FMU
- (2) Monthly Reporting by FMU to DMU
- (2) Monthly Monitoring and Monthly Reporting by DMU/FMU
- (3) Monthly, Quarterly, half yearly and Annually Reporting by PMU (Annual Review Meeting) and Reporting by PMU twice a year
- (4) Quarterly Reporting to JICA and Yearly Monitoring by JICA
- (5) Mid Term evaluation at Year 5
- (6) End Term evaluation at Year 10

JICA will conduct ex-post evaluation 2 years after the project completion.

Effect indicators as under shall be monitored through sample-based experiments in a scientific manner. PMU shall conduct baseline survey, mid-term survey, thematic studies and endline survey to monitor the following indicators in areas of intervention by the project.

- (1) Increase of carbon sequestration by the project (CO₂t)
- (2) Reduction in soil erosion levels at treatment sites of the project in Dry Lateritic and Alluvial Landscape (%)
- (3) Number of incidents of village flooding in targeted villages in Deltaic Landscape
- (4) Percentage reduction in Human-Wildlife Conflict in the project intervention area (in terms of occurrences) (%)
- (5) Annual profit earned per income generation activity under the project per SHG member

Research activities under each component also assess the effects of ecosystems services in a coordinated manner with monitoring indicators.

Actual: (P/R and PCR)

3-7 Achievement of the Project Objective

(PCR)

4: Operation and Maintenance (O&M) (Sustainability)

4-1 O&M and Management

- Organization chart of O&M
- Operational and maintenance system (structure and the number, qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc)

Original: (P/M)

During the consolidation phase, the assets shall be transferred to the respective entity which will be responsible for O&M of the assets.

The overall responsibility of O&M for all the plantations and JFM areas will be with WBFD. Similarly, other assets like digital infrastructures such as web-GIS and MIS, buildings, vehicles, computers, and other equipment/ gadgets will also be maintained by the concerned offices of WBFD after the project completion. O&M responsibility for some of the assets/ infrastructure created at the community level will be with the Joint Forest Management Committees (JFMCs) or individual households. Other associate organisations like the West Bengal Zoo Authority (WBZA) will be responsible for assets supported through the project.

WBFD is required to make sufficient financial and human resource arrangement to ensure the sustainability of the assets created during the project period. All the necessary capacity enhancement of the concerned personnel shall also be undertaken by the project prior to the project completion. One of the main assets that would require the technical capacity building for sustainability is the digital infrastructures including Web-GIS. Thus, the project shall provide the necessary training for personnel concerned of Web-GIS while WBFD shall provide adequate and continuous budgetary support for the operation, maintenance and further development of the system.

The provisional structure is as per Attachment 22 “Operation and Maintenance Structure”.

Actual: (PCR)

Attachment 22: Operation and Maintenance Structure

4-2 O&M Cost and Budget

- The actual annual O&M cost for the duration of the project up to today, as well as the annual O&M budget.

(PCR)

5: Evaluation

5-1 JICA and Borrower/Executing Agency Performance

Please evaluate the performance of the two bodies .

JICA:

(PCR)

Borrower/Executing Agency:

(PCR)

5-2 Additionality (If any)

Please describe 1) the unique approaches, values, elements (inputs) and innovative initiatives from a different perspective than other donors based on Japan`s knowledge and experience, 2) the contribution of offering/sharing of new knowledge obtained through the project

(PCR)

5-3 Overall evaluation

Please describe your evaluation on the overall outcome of the project.

(PCR)

5-3 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future JICA assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

(PCR)

Main Points Discussed

- I. Summary
 - II. Critical Issues Needing Immediate Actions
 - III. General Issues
 - IV. Project Specific Issues
-

I. Summary

Project Title and Objective

1. The JICA mission and Department of Forests, Government of West Bengal (WBFD) confirmed the title and objective of the Project as follows:

Project Title: “The Project for Forest and Biodiversity Conservation for Climate Change Response in West Bengal (WB-FBCCCR)”

Objective: the objective of the Project is to mitigate and adapt to climate change, conserve and restore ecosystems by ecosystem based climate change measures, biodiversity conservation and restoration, livelihood improvement activities and institutional strengthening, thereby contributing to sustainable socio-economic development in West Bengal.

Project Cost

2. The JICA mission and WBFD agreed that the entire cost of the Project is estimated as 11,634 million Japanese Yen, out of which 9,308 million Japanese Yen is to be covered by the loan for the Project (hereinafter referred to as the “the Loan”). The coverage ratio by the Loan is 80%. Cost breakdown is shown in the Project Status Report (**Annex I**). Both sides confirmed that the cost estimation is subject to the decision of the higher authorities of Government of Japan (GOJ).

Terms and Conditions of the Loan

3. WBFD proposed that Standard option as per below may be appropriate for the terms and conditions of the Loan for the Project, although it is subject to the decision of the higher authorities of GOJ. The JICA mission also explained that the terms and conditions of the Japanese ODA Loan are revised periodically, and the applicable terms and conditions for the Project may change accordingly.
4. WBFD requested to apply that the Preferential Terms to the Project considering the fact that it will contribute to Problems and Issues on Global Environmental and Climate Change.

Terms	Option	Interest Rate (%)	Repayment period (year)	Grace period (year)
Fixed Rate	Standard	1.5	30	10

(*) This is to be applied for main portion of the Project, while, for consulting services, the interest rate would be minimal (0.01%) and the repayment, grace periods and conditions for procurement would be the same as those for main portion.

Loan Disbursement Period

5. The JICA mission and WBFD confirmed that the Disbursement Period, in which disbursement is available, would be within 10 years after the effectuation of the Loan Agreement considering unexpected delay during the Project implementation, although the Project implementation period would be 8 years.

II. Critical Issues Needing Immediate Actions

Key Actions with Timeframe

6. WBFD agreed on key actions and all the clearances with timetable shown in Time-bound Action Plan as Attachment 23 and committed to implement the requisite actions in accordance with the Plan by the timing of signing the Loan Agreement. The JICA mission reiterated that timely implementation of these actions is imperative for signing the Loan Agreement. WBFD agreed to report the progress to JICA with reference to the Plan and take necessary actions for the necessary approvals. The JICA mission encouraged the accomplishment that the actual implementation gets ahead of the schedule in the Plan.

Possible Time frame toward the Loan Agreement

7. The JICA mission explained that decision on when and whether to provide the Loan fully pertains to GOJ based on the official request from the GOI, but indicated the approximate timeframe towards the signing of the Loan Agreement in FY2022/23 as shown below.

Table 1: Timeframe toward the Loan Agreement

Time	Event
Jan, 2023	Pledge (Prior Notification) from GOJ to GOI (* Subject to GOJ's decision)
Jan, 2023	Consultations on the Draft Loan Agreement
Mar, 2023	Exchange of Notes (E/N) between GOI and GOJ (* Subject to GOJ's decision)
	Signing of the Loan Agreement between the President of India and JICA *Disbursement can be started after effectuation of the Loan Agreement

8. The JICA mission explained that WBFD can start the tendering process for the JICA financed packages, only 30 calendar days after the Ex-ante Notification made by GOJ to the Organization for Economic Co-operation and Development (OECD), based on the agreement on untied ODA credit transparency among OECD participating countries. Ex-ante notification to the OECD will be made soon after GOJ shortlisted the Project for appraisal by JICA.

Required Clearance

9. WBFD confirmed that all the necessary clearances for the Project have been obtained.

III. General Issues

(A) Financial Issues

Terms and Conditions of Japanese ODA Loans

10. The JICA mission explained that the current terms and conditions of Japanese ODA Loans, whose prior notification is on and after 1 October, 2022 are as per Attachment 24.
11. The JICA mission explained to WBFD that the Preferential Terms might be applicable to a project if it will contribute to (i) Problems and Issues on Global Environmental and Climate Change / (ii) Health and Medical Care and Services / (iii) Disaster Prevention and Reduction / (iv) Human Resource Development, though it is subject to the decision of the higher authorities of GOJ.

Re-lending Arrangement

12. The JICA mission, WBFD and West Bengal Finance Department reconfirmed that the Non-eligible portion shall be borne by the Government of West Bengal. In regards to sharing of Loan portion between GoI and the Government of West Bengal, the policy and recommendations of GoI shall be applied to the project.

Prepayment Premium

13. Based on the General Terms and Conditions for Japanese ODA Loans dated April 2021, the JICA mission explained and WBFD understood that Prepayment Premium is charged if discounted amount of sum of original principle and interest is larger than actual repayment amount. The purpose of introduction of Prepayment Premium is to neutralize the impact of non-accrued interests which may be brought about by prepayments, which in turn enables JICA to maintain its financial soundness and to keep providing concessional loans to the borrowers. Details are shown in Attachment 25. The JICA mission requested WBFD to consult with GoI, before corresponding with JICA, in case WBFD intends to make a prepayment. WBFD agreed to it.

JICA Fund Coverage over Total Project Cost

14. The JICA mission explained to WBFD that ceilings of Japanese ODA Loans for the total estimated costs of the Project are 85% for India and that there is no such ceilings for particular component under the JICA eligible financial portion (hereinafter referred to as the “Eligible Portion”). Thus, in case the accumulated cost of Eligible Portion exceeds 85% of the total project cost, the financing ratio on each component could be less than 100%. WBFD agreed to it.

Front-End Fee

15. Based on the General Terms and Conditions for Japanese ODA Loans dated April 2021, the JICA mission explained and WBFD understood about the Front-End Fee (hereinafter referred to as “FEF”) which shall be applied to all the projects as follows:
 - The President of India (hereinafter referred to as the “the Borrower”) shall pay FEF to JICA at the rate of 0.2% of the maximum amount of the Loan.

- The Borrower shall pay FEF anytime on or after the Effective Date, but by the date set and notified by JICA to the Borrower upon the Effective Date, which shall be no less than sixty (60) days from, but excluding, the Effective Date.
- If the Disbursement Period of the Loan Agreement has not been extended and the Completion Date, determined by JICA, has occurred within the original Disbursement Period, the amount equivalent to 0.1% of the maximum amount of the Loan (hereinafter referred to as the “FEF Repayment Amount”) will be repaid to the Borrower.
- In repaying the FEF Repayment Amount, JICA may, at its discretion, (i) apply the FEF Repayment Amount in whole or in part, to the amount then due and payable by the Borrower to JICA, if any, and/or, (ii) set off the FEF Repayment Amount against any amount payable by the Borrower to JICA under the Loan Agreement. No interest or overdue charge shall accrue on the amount to be repaid from JICA to the Borrower hereunder.

Eligible Portion and Non Eligible Portion

16. The JICA mission explained and WBFD confirmed that i) Eligible Portion includes activities with regard to forestry, biodiversity conservation, livelihood development, institutional strengthening, construction, procurement of the equipment and consultancy services, and ii) Non Eligible Portion, which should be borne by WBFD, includes the followings;
 - a. General administration expenses
 - b. Taxes and duties
 - c. Purchase of land and other real property
 - d. Compensation
 - e. Other indirect items
17. The JICA mission and WBFD confirmed justification for the eligible portion of the Project in Assessment of Eligibility as per Attachment 26.

Counterpart Fund

18. WBFD and West Bengal Finance Department agreed to prepare counterpart fund for Non Eligible Portion as stated above.
19. WBFD and West Bengal Finance Department also agreed to mobilize additional financial resources when JICA’s contribution reaches the Loan amount.
20. WBFD explained that the counterpart fund and additional financial resources are arranged by utilizing department’s own budget in close coordination with West Bengal Finance Department.
21. The JICA mission pointed out that in the event of adoption of Reimbursement Procedure, any delay in the allocation of the budget and the release of funds, especially in the first year, will cause delay in the entire Project implementation schedule. WBFD confirmed budget allocation from the West Bengal Finance Department for payment of project activities through Reimbursement procedure. WBFD and West Bengal Finance Department agreed to it.

Disbursement Procedure

22. The JICA mission explained the disbursement procedures, namely Reimbursement Procedure as per Attachment 27 and Commitment Procedure as per Attachment 28. Under the Project,

Commitment Procedure will be applied for the payment of foreign currencies, and Reimbursement Procedure will be applied for the payment of local currencies.

- (1) **Commitment:** After the letter of credit (L/C) is issued by L/C issuing bank in India and Letter of Commitment (L/COM) is issued by JICA, suppliers can receive the fund from JICA passing through only commercial banks (L/C issuing bank and supplier's bank).
- (2) **Reimbursement:** After WBFD makes payment to suppliers, WBFD requests JICA through Controller of Aid Accounts & Audit (CAAA) to reimburse the fund. In this case, the funds transferred by JICA to the bank account of GOI will pass through (the State Government) to WBFD.

http://www.jica.go.jp/english/our_work/types_of_assistance/oda_loans/oda_op_info/procedure/index.html

23. The JICA mission explained that, under SOE (Statement of Expenditure) procedure as per Attachment 29, the records and accounts related to expenditures financed from Japanese ODA Loans shall be audited annually by an auditor appointed by WBFD. WBFD explained that it would engage a chartered accountant and mentioned that it would abide by the provisions of the Loan Agreement.
24. The JICA mission explained that, for the effectuation of the Loan Agreement, WBFD shall select L/C Issuing Bank, and submit the notice concerning L/C Issuing Bank which is stipulated in the Commitment Brochure. The notice shall be together with the banking arrangement concluded among the concerned parties which is satisfactory to JICA, in case that the L/C Issuing Bank is not the same as the Paying Bank. WBFD agreed to it.
25. JICA mission and WBFD affirmed the importance of timely payments to qualified suppliers and levelling disbursements by appropriate selection of disbursement procedures and the conditions of contract between the executing agency and suppliers. JICA mission and WBFD agreed to share long- and short-term estimation of disbursements for jointly monitoring the progress of disbursements during implementation of the project.

(B) Procurement Issues

Guidelines for Procurement under Japanese ODA Loans

26. WBFD confirmed that procurement of goods and services to be financed out of proceeds of Japanese ODA Loans should be implemented in accordance with "Guidelines for Procurement under Japanese ODA Loans", dated April 2012, and employment of consultants should be implemented in accordance with "Guidelines for Employment of Consultants under Japanese ODA Loans", dated April 2012. "Principles of Procurement under the Project" is attached for brief explanation of the above Guidelines as Attachment 11. WBFD agreed to it.
27. A copy of the following documents was handed over to WBFD for its reference and appropriate actions at the implementation stage:

Table 2: Reference Documents for Procurements

Reference Documents	JICA's Official Website Page
General Terms and Conditions for Japanese ODA Loans (G.T.C.) (April, 2021)	https://www.jica.go.jp/activities/schemes/finance_co/procedure/ku57pq000005089v-att/gtc_202104.pdf
HANDBOOK for Procurement under Japanese ODA Loans (April, 2012) (mentioned in III. 3. 1))	http://www.jica.go.jp/english/our_work/types_of_assistance/oda_loans/oda_op_info/guide/handbooks/201204.html
Standard Bidding Documents	https://www.jica.go.jp/english/our_work/types_of_assistance/oda_loans/oda_op_info/guide/tender/index.html
(November 2021 Ver.2.0) Guide for Employment Procedures and Evaluation of Consultants under Japanese ODA Loans	https://www.jica.go.jp/english/our_work/types_of_assistance/oda_loans/oda_op_info/guide/index.html
(November 2021 Ver.2.0) Guide for Procurement and Evaluation Procedures under Japanese ODA Loans	https://www.jica.go.jp/english/our_work/types_of_assistance/oda_loans/oda_op_info/guide/index.html
Check List for One Sided Contracts For use with “Sample Bidding Documents under Japanese ODA Loans-Procurement of Works” June 2009 Edition (March 2011)	https://www.jica.go.jp/activities/schemes/finance_co/procedure/guideline/pdf/check_e.pdf
Dispute Board Manual	https://www.jica.go.jp/activities/schemes/finance_co/procedure/guideline/ku57pq00000v0qa2-att/DisputeBoardManual_201911_e.pdf

28. The JICA mission explained about the JICA's policy to require the highest standard of ethics during the procurement and execution of the project and measures against corrupt and fraudulent practices stated in Section 1.06 of both Guidelines. WBFD fully understood about the JICA's policy and also agreed that WBFD require bidders/contractors/consultants to include their bids and contract documents a letter of acknowledgement of compliance with the guidelines to declare that the contractor/consultant is eligible in accordance with the concerned guidelines (Form ACK).

Ex-Post Procurement Audit

29. The JICA mission informed WBFD that, if the Loan for the Project is approved by JICA, an ex-post procurement audit shall be carried out during/after the implementation stage by Comptroller and Auditor General of India in order to ensure the fairness and competitiveness of procurement procedure, in case where JICA considers it necessary. WBFD agreed to it.

Working areas to be included in the “Site”

30. WBFD shall be responsible to designate and acquire working areas necessary for sound and safe implementation of the Project (i.e. construction yard, borrow pit, disposal yard, etc.). Such working areas shall be considered as a part of the Site as defined in the applicable construction contract and clearly be so indicated in the bidding documents together with all relevant Site Data.

Repackaging

31. The JICA mission reiterated that repackaging should be avoided to the extent possible since it will cause a delay in the implementation of the Project. The JICA mission stressed that the repackaging from the packages agreed by both parties in the present Minutes of Discussions will require the prior concurrence from JICA. WBFD agreed to it.

Minimum Age of the Construction Workers

32. WBFD agreed that it shall observe eighteen (18) years old as minimum age for the acceptance of construction workers in reference to the Child Labour (Prohibition & Regulations) Act, 1986 and Rules 1950.

(C) Safety and Security

Safety of the Project

33. The promotion of occupational health and safety is a value to be pursued by all the stakeholders of the Project. Based on this understanding, both sides agreed that particular attention shall be paid to construction safety.
34. WBFD agreed to notify JICA immediately (within 24 hours at the latest) in case any fatal or important accident, involving serious injuries or damages, occurs during the implementation of the Project.
35. WBFD agreed to confirm the laws and regulations regarding occupational safety and health in the country of the Borrower for safe implementation of the Project.
36. WBFD agreed to delegate to the consultant, engaging in the construction supervision, necessary power to secure the construction safety in accordance with the applicable Standard Bidding Documents.
37. In an effort to assure the safety during the construction work of the Project, WBFD shall take the following actions;
 - (1) Bidding documents for procurement of works and those for procurement of supply and installation of plant require that:
 - i) The safety requirements be clearly stipulated in the specifications of the bidding documents. Such requirements shall be in accordance with the laws and regulations on occupational safety and health in the country of the Borrower and shall contain additional safety requirements as needed.
 - ii) Bidders shall furnish a safety plan establishing basic policies on the general safety management and operation for the entire works at site in accordance with the safety requirements stipulated in the bidding documents. Such a safety plan shall be updated after signing a contract as appropriate;

- iii) The personnel for key positions to be proposed by bidders shall include an accident prevention officer;
 - iv) Contractor shall submit method statements of safety to WBFD and the consultants at the construction stage.
- (2) The following tasks shall be included in the scope of assignments of the Terms of Reference (TOR) for the consultancy services:
- i) When preparing or reviewing bidding documents for procurement of works and those for procurement of supply and installation of plant, the consultants shall make sure that the requirements stipulated in (1) above will fully be met;
 - ii) During the bid evaluation, the consultants shall review the safety plans submitted by the bidders from the point of view of securing the safety during the construction;
 - iii) During the supervision of the construction work, the consultants shall;
 - confirm the safety plan is duly updated and implemented by the contractor;
 - confirm method statements for each type of work are prepared taking account of safety and duly implemented by the contractor;
 - confirm any other safety requirements specified in the contract are respected by the contractor; and
 - in case of necessity, instruct the contractor to make good.

Security of the Project

- 38. WBFD agreed that WBFD shall, at its own responsibility and expense (including the proceeds of the Loan, if necessary), take necessary measures to ensure and maintain the security of the Project area and the persons related to the implementation of the Project, in cooperation with relevant authorities during the Project period. Such security measures shall reasonably reflect views and needs of the Consultant/the Contractor engaging in the implementation of the Project.
- 39. WBFD confirmed that the Project area is fully controlled and secured by Government of West Bengal and its law enforcing authorities, and there is no security concern in the area at present. In addition, Government of West Bengal and its law enforcing authorities committed to take necessary measures to a maximum extent to maintain the security in the Project area.
- 40. JICA and WBFD agreed that security guards to be hired for the Project or other personnel to be deployed to ensure and maintain the security of the Project area as well as the persons related to the implementation of the Project will not use any force to provide security except when used for preventive and defensive purposes in proportion to the nature and extent of the threat.

Countermeasures against Coronavirus Disease (COVID-19)

- 41. The JICA mission and WBFD confirmed the priority of the safety of the Project related stakeholders and personnel against the spread of the COVID-19 during the implementation of the Project and WBFD agreed to take all necessary countermeasures through the consultancy service and the contract packages to prevent the infection of the COVID-19 in the Project in accordance with the related law, regulations and guidance from the related authority/organization.
- 42. The JICA mission also requested WBFD to take necessary measures for smooth execution under such circumstances, by particularly referring to the 'COVID Mitigation Measures Matrix' as per Attachment 34.

43. In case, any condition or event is likely to have an adverse impact on the Project implementation, JICA mission requested WBFD to review and realize practicality of the situation and promptly consult with consultant/ contractors and JICA on the necessary mitigation measures to be taken in accordance with the relevant contract provisions. In addition to that, JICA requested WBFD to submit the updated status of the COVID Mitigation Measures Matrix on quarterly basis together with QPR. WBFD agreed to it.
44. Both sides also agreed to mobilize necessary cost for those countermeasures in the Project cost including contingency for unforeseen impact of the COVID-19 when deemed necessary.

(D) Other Issues

Publication of Ex-Ante Project Evaluation Report

45. The JICA mission and WBFD notified that JICA will disclose the press releases and the “Ex-Ante Project Evaluation Report” soon after the signing of the Loan Agreement for the Project. These documents are prepared based on the information collected through JICA’s study and findings, consisting of nine major items;
 - (1) Name, Loan Amount, Terms and Conditions of the Loan;
 - (2) Background and Necessity of the Project;
 - (3) Name, Address, Phone Number of the Executing Agency;
 - (4) Project Description;
 - (5) Planned Implementation Schedule (expected completion date, tendering schedule);
 - (6) Targeted Outcomes (Operation and Effect Indicators, etc.)
 - (7) External Factors and Risk Control;
 - (8) Results of Evaluation and Lessons Learned from Past Projects; and
 - (9) Plan for Future Evaluation.

Submission of Reports

46. Quarterly Progress Reports (QPR): The QPR for the Project should be submitted by WBFD to JICA India Office on a quarterly basis, not later than 30 days after the concerned quarter, by updating the PSR attached hereto as **Annex I**. Updated status of Land Acquisition, milestones achieved with respect to Action Plan with Timetable should also be appended to the PSR. In addition, WBFD shall also forward the Monthly Progress Reports prepared by the Project Management Consultant (PMC) to JICA India Office on a regular basis until project completion.
47. Project Completion Report (PCR): The PCR should be submitted by WBFD to JICA India Office promptly, but in any event not later than six (6) months after completion of the Project, by updating the PSR attached hereto as **Annex I**.

Ex-Post Evaluation

48. The JICA mission explained that JICA would conduct independent evaluation activities 2 years and 7 years after the project completion so as to review the project’s effectiveness. Additional ex-post monitoring might be further implemented for the same purpose. It is agreed that, upon JICA’s request, WBFD shall be responsible for the submission of performance evaluation result including the Indicators, EIRR, and the relevant data/assumptions adopted to arrive at the Indicators. In case

the operation and maintenance organization structure changes, the relevant departments/ organizations will be responsible for undertaking this task. WBFD agreed to it.

Public Relations

49. In an effort to foster the friendship between Japan and India, WBFD agreed to inform the general public of the use of the Japanese ODA for the Project Loan through mass media (TV and Press, etc.) and to publicize at appropriate occasions such as the inauguration and completion of the Project. In such occasions, WBFD agreed to announce accurate information of Japanese assistance by referring to Japanese ODA Loan. WBFD agreed to invite officers from the Japanese Embassy and JICA to the opening and completion ceremonies.
50. WBFD confirmed that these logos as Attachment 31 will be put up on at all project sites under JICA's funding in addition to the logo of WBFD and another transparency board with all information about the works done at the site.

Record of the Project

51. The JICA mission suggested that WBFD record the detail of the Project progress as a "project life history" from the perspective of public relations and future replication. WBFD took note of it.

Disclosure of Project Implementation Schedule

52. The JICA mission explained that the expected implementation schedule with the updated status of the Project may be made public by JICA. WBFD shall make the aforementioned information available for JICA upon request.
53. The JICA mission and WBFD agreed to disclose the following information at the time of signing of the Loan Agreement for the Project: (i) scheduled project completion; (ii) issuing of letters of invitation for consulting services; and (iii) tender announcement of initial procurement package for international competitive bidding.

IV. Project Specific Issues

(A) Cross-cutting Issues

Actions to Be Taken

54. WBFD reiterated its commitment to complete the entire project by March 2031. The implementation schedule of the Project is as per Attachment 5.
55. The JICA mission and WBFD defined the Project Completion Date as date by when activities of the Project shall be completed in totality.
56. For realizing the Project in a timely manner and enriching the effectiveness, the JICA mission stressed the following issues/principles as keys for smooth implementation of the Project and timely and sustainable realization of the Project effects. WBFD agreed to pay adequate attention to these elements throughout the project period and even after completion of the Project.
 - Establish a Project Management Unit (PMU) for the project
 - Appoint dedicated Chief Project Director/Project Directors/Additional Project Director and other important staff to work at least for initial 3 - 4 years in continuation, except in case of unforeseen administrative exigency
 - Constitution of High Power Committee and other committees for the project
 - Ensure smooth functioning of the PMU and deployment of Project Management Consultant
 - Deployment of key staff to PMU on full time basis
 - Streamline approval process at various stages in procurement and implementation phase to avoid delay
 - Establish a robust monitoring structure in order to assess the progress as well as effects of the Project
 - Ensuring appropriate and timely financing arrangement to cover the entire Project as per the decided Implementation Schedule of the project
 - Secure budgetary allocations and fund releases from Government of West Bengal for payment for the project works through the Reimbursement procedure
 - Taking all the possible measures to prevent the cost overrun of the Project by maintaining the project implementation efficiency

(B) Project Component

Scope of the Project

57. The JICA mission and WBFD agreed the components of the Project as follows. The detailed information of each component is defined in the Detailed Scope of Work (Attachment 3).
 - Component 1 : Ecosystem based Climate Change Measures
 - Component 2 : Biodiversity Conservation and Restoration
 - Component 3 : Livelihood Improvement
 - Component 4 : Institutional Strengthening

Issues to be Addressed

Climate Change as Core Issue

58. The JICA mission and WBFD agreed that the core issue to be addressed in the Project is climate change. West Bengal, as well as India, needs to take measures toward carbon neutral society for sustainability of the economy and society. It is also pointed out that West Bengal is a state prone to various disasters including cyclones, floods and landslides, which will become more severe due to climate change.
59. WBFD explained that climate change mitigation measures through carbon sequestration is a major part of the Project.

Selection Criteria

60. The JICA mission suggested that considering climate change as a common issue to be addressed in the Project, it is important that components under the Project should be consistent to the issue, and that the target areas as well as target communities shall be selected by criteria such as “vulnerability to the climate change” and “effectiveness for climate change mitigation”, to address intensively on the issue of climate change with more significant impact on the livelihood of the people as well as environment.
61. The JICA mission also stated that during the implementation, actual project sites shall be selected based on certain criteria which is also considered as field level. Both parties agreed to indicative criteria and selection procedures as per Attachment 2, while PMU shall finalize the same with support from Project Management Consultant. WBFD agreed to it.
62. The JICA mission also explained that overlapping of the project sites and JFMCs at Beat level with Phase 1 project shall not be done by WBFD. WBFD agreed to it.

Project Approach

4 Key Directions

63. The JICA mission explained 4 Key Directions as a principle of project formulation. The salient explanation is as under:
 - Scientific Policy Planning and Implementation: utilizing and strengthening science for policy planning and implementation of forest and biodiversity management to maximize project effectiveness.
 - Green Laboratory: utilizing project sites as laboratories for international/national experimental studies in partnership with academicians to create knowledge. Such knowledge is expected to be useful in other parts of the world and shared as international public goods.
 - Dynamic Collaborations: seeking partnerships with various entities including academicians and private companies to add more value on the Project.
 - Mobilization of ESG Investment: “ESG” is Environmental, Social and Governance. There are growing attentions in global companies to contribute to sustainability including environment throughout companies’ value chains process and other activities, where the Project may have common interest and target.

Collaboration with Japanese Partners

64. The JICA mission suggested seeking collaboration with Japanese private companies in accordance with Dynamic Collaborations and Mobilization of ESG Investment.

65. WBFD explained that the ideas of mobilization of ESG Investment is difficult because land from individuals are difficult to be controlled by WBFD. Also, WBFD explained that any collaboration with foreign private companies is subject to approval by Government of India.
66. Following the WBFD's explanation, JICA mission suggested seeking collaboration with private companies in India including Japanese companies which have branch offices in India through CSR with the objective to invite investments, technical supports from private companies and market linkages between the private companies and JFMCs/SHGs. The JICA mission explained that this collaboration is to maximize and expand the project outcomes and advantages such as obtaining alternative funds for project activities and its sustainability, obtaining effective technical support for better wood production etc. Indicative ideas of the collaboration are;
 - (1) Fund support for Support for Community Well Being (Local Traditional Healers) and trading medicinal plants.
 - (2) Fund support for Support for Income Generation and trading medicinal plants, etc.
 - (3) Fund/ technical support for TPOFA (if any).
67. Both sides agree to continue to examine possibility of this idea and seek the possible collaboration with private sector through support from Project Management Consultant.

Climate Change as a Common and Consistent Development Issue

68. The JICA mission suggested that all activities in the Project address climate change mitigation/adaptation as a common development issue. WBFD agreed on it.

Lessons Learnt from Phase 1

69. The JICA mission and WBFD confirmed that lessons learnt from phase 1 need to be incorporated in the implementation strategy of the Project specially for components such as Income Generation Activities, plantation methods, microplanning process etc to make phase 2 more effective.

Adaption of Landscape Approach

70. Both sides agreed to apply Landscape Approach considering its geographical features and variety of issues being faced in each landscape. The JICA mission and WBFD agreed to divide the project area into 3 landscapes which are Hills and North Bengal Landscape, Dry Lateritic and Alluvial Landscape, Deltaic Landscape.
71. To monitor the landscape-based progress and effectiveness, the JICA mission and WBFD agreed to assign a staff at PMU for landscape monitoring, who will coordinate among related officers in WBFD. Both sides also agreed that HPC/GB will play a role of facilitating smooth coordination within WBFD for ensuring landscape-based effectiveness.

Batchwise Project Implementation

72. As per the DPR, the project will be having three batches of JFMCs with the total of 600 JFMCs where project interventions will be made. However, in order to secure quality works under both forestry and livelihood interventions in JFMCs, WBFD suggested that 600 JFMCs could be spread over four batches instead of three, including the allied activities.

73. JICA took note of the suggestion and stated that the decision with regards to number of batches needs to be discussed and decided between WBFD and JICA India Office before the commencement of the selection of JFMCs for the first batch.

Project Components

Component 1: Ecosystem Based Climate Change Measures

Plantation in Degraded Forest Area

74. The JICA mission stated that the cycle of the plantation, carbon sequestration, felling and disposal of wood, replantation, is essential, and replantation shall be performed in case any felling is resorted to.
75. WBFD explained that as a general mandatory practice of WBFD, replanting will be performed in accordance with approved working plan and its necessary budget will be allocated as per the area where replanting is necessary. WBFD also explained that felling is not expected in plantation area of the project. Rotation of the tree species in the Hills and North Bengal Landscape is approximately 50-60 years and rotation of the tree species in Dry Lateritic and Alluvial Landscape is approximately 12-15 years. JICA took note of it.

Intercropping Activity

76. WBFD explained that intercropping activity advised by MoEFCC described in Attachment 35 can be performed in Plantation in Degraded Forest Areas in Hills and North Bengal Landscape and Dry Lateritic and Alluvial Landscape with the medicinal herbs in the first three years of the plantation. Also, WBFD explained that if the budget for intercropping activity is required for JFMC, budget of Activity 3.1.3 and 3.2.3 Support for Community Well Being (Local Traditional Healers) will be utilized. Both sides agreed to it.

Green Laboratory

77. The JICA mission proposed the introduction of Scientific Policy Planning and Green Laboratory activities into the project's main components and establish India-Japan academic consortium. The JICA mission and WBFD agreed to this concept to incorporate this activity into the component 1, Activity 1.1.4.2, 1.2.4 and 1.3.2.2. The JICA mission and WBFD agreed to continue to examine the possibility of implementation of this idea, in accordance with necessary governmental procedure, and include necessary related cost of researchers and academics in the eligible project cost. Further discussion about candidates of Indian and Japanese researchers participating for this consortium and subjects of the research /research plan shall be made in the future.

Component 2: Biodiversity Conservation and Restoration

Rescue Centre for Elephants including Study of their Behaviour

78. WBFD proposed construction of an Elephant Rescue Centre in Dry Lateritic & Alluvial Landscape. Further WBFD also mentioned about the need for providing Rescue Centres for other

problematic animals like tiger, leopard and bear. JICA noted the proposal and stated that while budgetary provision is there in the project cost for an Elephant Rescue Centre, WBFD could also consider Rescue Centres for other animals mentioned above also within the budget allocated. However, detailed project report for such Rescue Centre(s) shall have to be prepared by WBFD after obtaining all necessary clearances from the state and central governments. Thereafter, such detailed project reports will be submitted to JICA India Office for necessary approval before commencing the implementation of the same.

Activities Executed by West Bengal Zoo Authority (WBZA)

79. WBFD explained that some of the activities such as Rescue Centre for Elephants including Study of their Behavior (Activity 2.2.3.1) will be executed by West Bengal Zoo Authority (WBZA) which is the authority under the umbrella of WBFD as well as government controlled registered society under the Department of Forests, Government of West Bengal.
80. The JICA mission suggested that all activities which WBZA will execute shall be monitored on a monthly basis with regard to financial and physical progress by WBFD as general project monitoring system and its indicators. WBFD agreed to it.

Component 3: Livelihood Improvement

SHEP Approach

81. The JICA mission proposed to seek for the possibility of implementation of Smallholder Horticulture Empowerment & Promotion (SHEP) approach especially for Component 3, Activity 3.1.2, 3.2.2 and 3.3.2 Support for Income Generation.
82. The JICA mission and WBFD agreed to examine possibility of this idea and take it forward.

Nutrition Improvement Approach

83. The JICA mission suggested that nutrition activities might be another option to further add values in the project. The JICA mission also explained that JICA is prioritizing nutrition improvement as one of imperative global agenda.
84. WBFD explained that Forest Department does not have any mandate related to nutrition improvement, and it is the mandate of Health, Food & Supplies Department and Agriculture Department. Also, WBFD explained that Food & Supplies Department provides free meal to the person of below poverty level. On the other hand, WBFD suggested that Kitchen Garden at school in small portion is considerable as nutrition improvement activity in this project as a part of livelihood improvement activity.
85. Both sides agreed to examine possibility of this idea and take it forward.

Micro Plans

86. JICA mission stated that Micro Planning is one of the most integral activity which must be taken up by WBFD in a participative manner and by providing enough opportunities (at least three meetings) to the communities to participate in the PRA and formulation process. The evidence of such participation shall be recorded in a chronological manner in the Micro Plan along with

photographs, as evidence. Further, the Micro Plans shall be bilingual (English & Bengali) and also be converted to digital ones and shall be made available for the reference of the village communities, as and when required. Micro Plans shall be updated by recording of the progress on an annual basis for facilitating better monitoring. Further, it needs to be noted that no activity in the JFMC shall be commenced unless an approved Micro Plan is available for the same.

Component 4: Institutional Strengthening

Digital Transformation (DX)

87. The JICA mission stressed the importance of pursuing digital transformation (DX) and creating value through data, beyond digitalization activities proposed by WBFD and described in the Attachment 3. The current proposal focuses primarily on the efficient and effective collection and accumulation of data, and its necessity is indisputable. Equally important, however, is how the data can be linked and exchanged with external databases, opened to public to the extent possible, effectively processed, and transform into valuable services, which should also be considered in the project as an effort to maximize development impact.
88. Also, the JICA mission emphasized that the project efforts and results related to digitalization and DX activities should be disseminated throughout WBFD operations, rather than keeping them within the project. In this regard, it was confirmed that there is the lack of an overall policy and guidelines for the use of data within the WBFD and this should be addressed by the project.
89. Therefore, the JICA mission proposed the followings as DX acceleration activities under the project.
 - (1) The MIS/Web-GIS system under consideration should incorporate the broader concept of an integrated data platform that enables open access to the database, linkage and exchange with external databases, processing of data, provision of innovative services, and continuous value creation chain from such data-driven activities. The system should also be designed as an integral part of the entire system architecture of WBFD for deployment beyond this project scope.
 - (2) The project will further seek to develop a “WBFD Digital Transformation Strategy” that encompasses a long-term vision, a comprehensive concept, and approaches on how to transform the WBFD's operations through the utilization of data and digital technologies and a co-creation mechanism with innovative digital solution providers.
 - (3) In order to develop the practical strategy and promote the implementation of DX measures, it is imperative to identify appropriate use cases of data utilization and digital technologies, and extend try-and-error in the project field. Thus, the project will incorporate a sub-component of “Proof of Concept” (PoC) activities for several digital technology/ innovation. Potential idea of the PoC activities includes, but not limited to, community involvement with the integrated data platform, smart reforestation planning, smart elephant coexistence system shown as examples in the JICA presentation material as per Attachment 20.
90. WBFD welcomed the JICA suggestion and agreed to include the above DX-related activities within the project. Specifically, the project management consulting services will incorporate such scopes as drafted in Attachment 4, and the high-level prospective cost for the PoC is included within the project cost estimate as per Attachment 7.

91. Details in the DX-related project activities described above, including the possibility of extending supplemental JICA technical assistance, will be further examined jointly by WBFD and JICA.
92. Since some of the above DX-related activities and their effects will go beyond the project scope for dissemination to the entire state of West Bengal, WBFD PMU will jointly work with the state-level GIS/MIS cell and other relevant units/cells for jointly creating a vision and concept of WBFD DX strategy to implement the same.

Inter-sectoral Linkages

93. For enhancing the socio-economic and environmental impacts of the projects, JICA mission stressed upon the need of ensuring strong inter-sectoral linkages. All efforts shall be made by WBFD to institutionalize the inter-sectoral linkages from State to District and Block level, as envisaged under the project. A strong monitoring mechanism for the same to understand the quantum of inter-sectoral linkages achieved in each JFMC shall be established by WBFD and progress shall be recorded on an annual basis in the Micro Plan in each JFMC.

(C) Procurement Issues

Procurement Method for Contract Packages

94. The JICA mission and WBFD agreed procurement methods and applicable Bidding Documents for each contract package which are eligible for the Loan as in the Table 3(below). Both sides also agreed that the appropriate Standard Bidding Documents of the latest version are used in accordance with Section 4.01 of the Guidelines for Procurement under Japanese ODA Loans.

Table 3: Procurement Method and Relevant Standard Bidding Documents

Pkg #	Package name	Procurement method (ICB/LCB, following P/Q/with Qualification)*	Contract Type	Applicable Standard Bidding Documents
1	Consulting Services	Shortlist method, QCBS	-	Standard Request for Proposals under Japanese ODA Loans

*Prequalification (“P/Q”): in principle required in advance of bidding for large-scale, complex, and design-build contract which preparation of detailed bids are costly or when participation of numerous bidders are expected.

Qualification as part of Evaluation of Technical Bids (“with Qualification”): to be applied when the number of the potential bidders is limited.

Selection Method for Consultancy Services

95. The JICA mission and WBFD confirmed that the consultant shall be selected by Quality and Cost Based Selection (QCBS) method, and standard allocation of weights to be given to the quality and cost (80% and 20% respectively) should be applied to ensure the quality of the Project and keep safety during the construction.

96. Both sides also confirmed that the latest version of Standard Request for Proposal (standard RFP) shall be used for selection of consultant in accordance with Section 3.05 of the Guidelines for the Employment of Consultants under Japanese ODA Loans.

Acceleration of Consultant Selection

97. Both sides shared the view that timely employment of consultant would be quite important for smooth implementation of the Project.

TOR of Consulting Services

98. The JICA mission and WBFD confirmed that the draft TOR for consulting services is as per Attachment 4, which is to be included in the RFP.

99. The JICA mission explained responsibility and role of consultants and the definition of Pro (A) and (B) as follows:

Pro (A) (International Consultant) should be defined as “Engineer/expert who has appropriate professional experiences in the field of international projects as key staff where he/she assumed the primary responsibility for project management and is capable of making and delivering a fair determination/judgment to the employer and the international contractor.”

Pro (B) (Local Consultant), on the other hand, should be defined as “Engineer/expert who has appropriate professional experiences in domestic investment projects in the Borrower’s country or who has appropriate experiences in the field of international projects where he/she provided services under supervision/control of the International Consultants.”

Approval Process of Tendering

100. WBFD explained that WBFD has internal tendering committee which can decide on all matters about procurement of the consultant and the contractors without any approval from other government agencies, except for final contract which is approved by Higher Tender Committee. WBFD agreed to issue official notification mentioning the above by signing the Loan Agreement.

(D) Project Cost Issues

Physical Contingency

101. The JICA mission and WBFD agreed that the physical contingency under the Project is set as 5% so that WBFD could make possible shortages of funds smaller for the implementation of the Project and realization of the Project objectives in the future.

102. The JICA mission and WBFD agreed that if some amount of the physical contingencies and activity-wise cost is observed to remain unutilized at or after mid-term review, then WBFD and JICA can discuss and agree to utilize its balance for value added activities such as PoC of DX, Green Laboratory, collaboration with private companies etc.

(E) Institutional Arrangements

Responsible Organization for Implementation, Operation and Maintenance of the Project

103. WBFD shall be fully responsible for the Project and confirmed to take all necessary measures, in a timely and efficient manner based on the Project Implementation Schedule shown in Attachment 5. The organizational structure of WBFD is as per Attachment 10. WBFD agreed to inform JICA of any change of the organizational structure whenever it happens.

WBFD confirmed that, after the completion of the Project, WBFD shall continue to be responsible for the efficient operation and maintenance and asset management for the Project.

104. The JICA mission and WBFD agreed that for smooth implementation of the Project, Project Management Unit (PMU) shall be established, which shall assume full responsibility to implement the Project with the assistance of Project Management Consultant (PMC). The organizational structure of PMU is as Attachment 10. Members of PMU are:

- Chief Project Director (CPD)
- Project Director (Administration, Finance and Cooperation)
- Project Director/Additional Project Director (Planning and Implementation)
- Additional Project Director (M&E, Research, and Institutional Strengthening)
- Joint Project Director (Livelihoods and Partnership)

105. The JICA mission stressed the need for additional recruitment of appropriate number of engineers for WBFD for the Project, to enhance technical capability of WBFD for planning and monitoring of the construction works. WBFD agreed to recruit around 1 engineers immediately after the Loan Agreement is signed.

Minimization of Core Staff Transfer

106. Frequent transfers of core staff, such as Chief Project Director/Project Director/Additional Chief Director, increase the difficulty in efficient and timely implementation of the project components. The JICA mission requested WBFD to minimize transfer of the staff in the core positions under the Project. WBFD agreed to it.

(F) Environmental and Social Consideration Issues

JICA Guidelines for Environmental and Social Considerations

107. The JICA mission explained the requirements of "JICA guidelines for environmental and social considerations" dated April, 2010 to WBFD. WBFD understood it.

108. JICA mission also explained that the Project which is under Japanese ODA Loan should comply with the Guidelines. WBFD agreed to it.

109. The JICA Mission and WBFD confirmed that the Project is categorized as category FI because Sub-projects cannot be specified prior to JICA's approval for financing, and they may have environmental social impacts under the Guidelines.

110. The JICA mission and WBFD agreed that any project component which would be likely to have significant adverse impact on the environment and Society (category A under the JICA Guidelines for Environmental and Social Considerations) and which would require any land acquisition and involuntary resettlement shall not be selected under the Project.

111. The JICA mission explained that if there are sub-project(s) to be implemented in protected area, even if its category is not Category A, the activity shall comply with 5 conditions listed on page 32 of the "FAQs and JICA's answers (April 2010)". WBFD agreed to it.

Environmental Checklist

112. WBFD confirmed that the environmental considerations for the Project are summarized in the Environmental Checklist as Attachment 13. WBFD assured that they will take necessary measures in accordance with the checklist, and will report to JICA India Office if any major changes affecting the environment occur to the Project.

Environmental and Social Management System Checklist

113. WBFD confirmed that the environmental and social management system for the Project and its improvement plan are summarized in the Environmental and Social Management System Checklist as Attachment 16. WBFD assured that they will take necessary actions for the improvement of the environmental and social management system in accordance with the checklist, and will report to JICA India Office if any major changes affecting the environment occur to the Project.

Environmental and Social Management System Framework

114. The JICA mission and WBFD agreed that the Environmental and Social Assessment Framework (ESAF) in Attachment 17 have been prepared, and WBFD shall execute the Project based on ESAF.

115. The JICA mission and WBFD agreed that Environmental Assessment as well as Social Assessment will be conducted only for the Sub-projects categorized as “Category B” and PMU determines the necessity of such assessments in accordance with ESAF/Vulnerable People’s Planning Framework (VPPF) and, in case of Category C Sub-projects, any Environmental and Social Considerations relevant assessment and monitoring will not be required.

116. The JICA mission and WBFD agreed that WBFD shall report to JICA India Office if any major changes are made for ESAF/VPPF. Furthermore, the JICA mission explained that if ESAF/VPPF are found out to be not working, WBFD and JICA shall review the framework and the Project shall be executed based on the revised framework. WBFD agreed to it.

Scheduled Tribe and Forest Dependents Plan

117. In light of the requirement of the “Guidelines”, the JICA mission and WBFD agreed with VSTPF shown in Attachment 18 for Sub-projects. Based on the VPPF, WBFD shall prepare the Vulnerable People’s Plan (VPP) and submit it to JICA, which shall be incorporated in the Micro Plan, in case that the Project has impacts on local customs and traditions of vulnerable ST and Forest Dwellers.

Monitoring

118. WBFD confirmed that when it comes to the categorization of Sub-projects included in Micro Plan, in case there are both Sub-project categorized as ‘B’ and ‘C’, WBFD shall execute the Project in accordance with the former (higher categorization).

119. WBFD confirmed that it shall monitor its performance of the environmental and social management system and report the result to JICA on an annual basis by filling the monitoring form as per Attachment 15.

120. Also, JICA explained and request that in case there are Sub-project categorized as ‘B’, WBFD is requested to submit monitoring report quarterly basis to JICA as a result of monitoring which is based on the Environmental Monitoring Plan specified on the framework.

121. WBFD agreed that WBFD shall submit to JICA the results of environmental and social monitoring and the status of implementing the stakeholder meetings as a part of Project Status Report.
122. WBFD agreed JICA's disclosure of provided monitoring results on its website. When third parties request further information, JICA disclose it, subject to approval by WBFD.
123. WBFD agreed to confirm the laws and regulations on the occupational safety and health in the country of the Borrower for safe implementation of the Project.

(G) Other Issues

Climate Change Effect and Information Disclosure

124. The JICA mission and WBFD agreed that the Project will contribute to mitigation of climate change, with an estimated annual Greenhouse Gas (GHG) emissions reduction of 498,402 CO₂ equivalent. (as per Attachment 33).
125. The JICA mission and WBFD agreed that the Project will contribute to adaptation of climate change, through climate risk mitigation from climate change measures through improvement of ecosystem.
126. The above information will be submitted to GOJ, and will be disclosed to the public. The mode of disclosure will be through the JICA website after the signing of the Loan Agreement.

Gender Consideration

127. JICA mission and WBFD confirmed that gender consideration should be duly practiced for the project implementation. In particular, JICA mission and WBFD agreed on the following gender perspective and elements to be integrated into the project implementation.
 - (1) Facility design to reflect gender-specific needs (e.g. separate toilet and rest areas, breast-feeding areas, substantial lighting to secure safety etc.)
 - (2) Selection of equipment to reflect gender-specific needs and ensure usability by both men and women.
 - (3) Promote gender equality in construction work (e.g. establishing the quota of female construction workers, ensuring the same wage for the same nature of work as their male counterparts, providing facilities for female workers etc.)
 - (4) Encourage women's recruitment as staff and managers and promote gender equality in the PIU, operation and maintenance system and others.
 - (5) Ensure that female-headed households are equally or better compensated than male-headed households if resettlement takes place.
 - (6) Collect gender disaggregated data for monitoring and evaluation where appropriate.Detail interventions is as per Attachment 30.
128. The JICA mission explained that JICA's approach to SEAH (Sexual Exploitation, Abuse, and Harassment) is based on the DAC "Recommendation on Ending Sexual Exploitation, Abuse, and Harassment in Development Co-operation and Humanitarian Assistance" adopted by DAC in July 2019. WBFD understood JICA's basic policy and agreed to make maximum efforts to eradicate SEAH throughout this project.

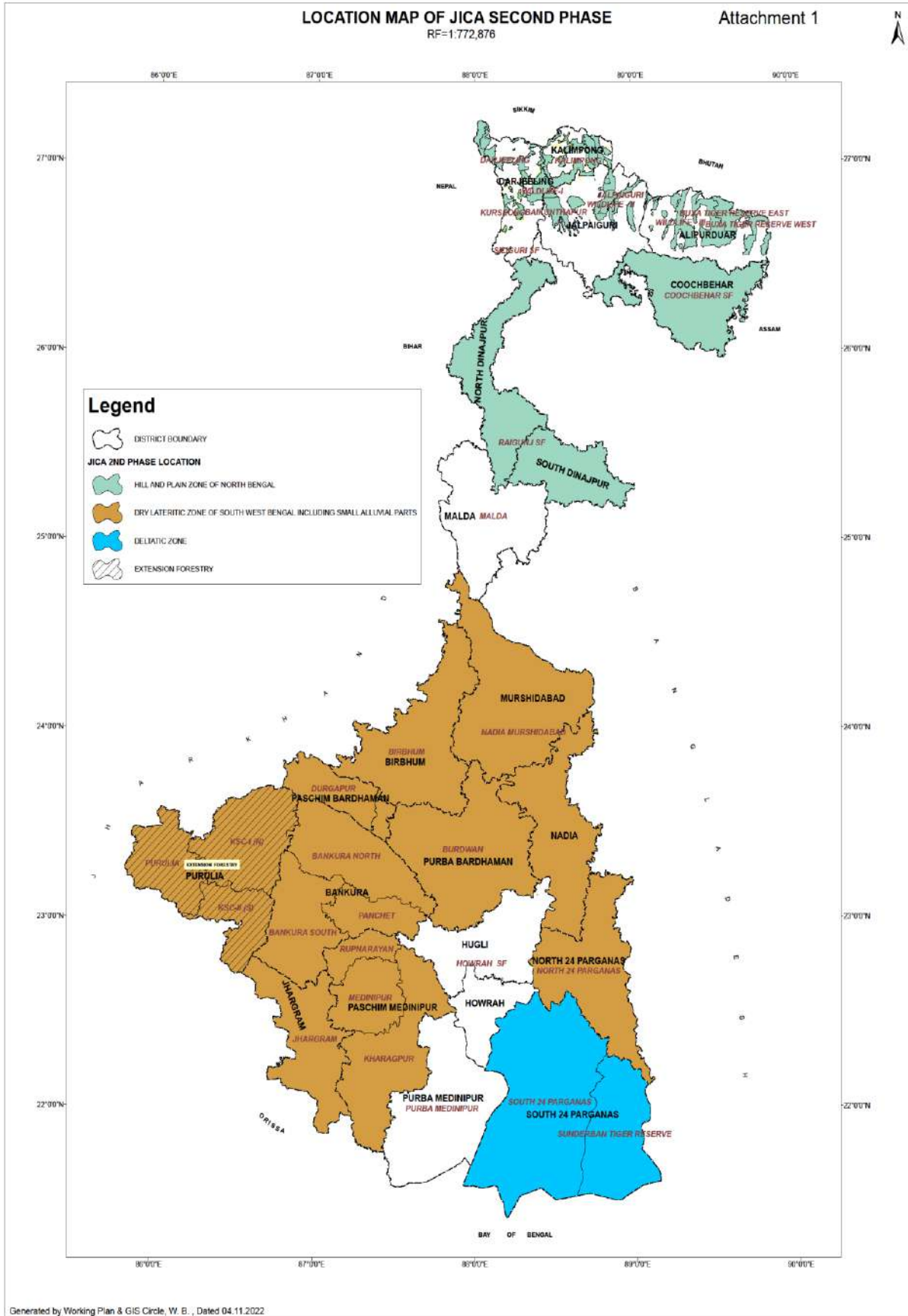
https://www.jica.go.jp/english/our_work/compliance/seah_eradication.html

Operation and Effect Indicators

129. The JICA mission and WBFD agreed to the Operation and Effect Indicators applied to the Project as Annex I 3-5. The JICA mission informed that the Indicators would be disclosed on the website of JICA. WBFD agreed to monitor the Indicators and provide the relevant data to JICA in appropriate timings.
130. WBFD shall report actual figures of the Operation and Effect Indicators in the progress reports and cooperate with JICA for submitting the latest figures at the time of ex-post evaluation.
131. In case organizational structure changes, the relevant departments will be responsible for undertaking this task. Smooth data collection should be carried out in order to maintain institutional memory for the purpose of continuous monitoring and evaluation of the Project.

LOCATION MAP OF JICA SECOND PHASE
RF=1:772,876

Attachment 1



Attachment 2: Selection Criteria

1. Identification of Divisions to be Intervened under the Project

1.1 Selection Criteria and Procedure of Project Area

Identification of project sites is proposed to be undertaken in the following steps: 1) Identification of landscapes; 2) Scoping of districts and divisions, and 3) Identification of ranges or unit of project intervention for each sub-component.

1.2 Identification of the Landscapes

The concept of landscape was adopted in broadly identifying the geography in correspondence to biogeographical zones and the manifestations of climate change impacts. In this project, 1) Hills and North Bengal Landscape; 2) Dry Lateritic & Alluvial Landscape; and 3) Deltaic Landscape are adopted. This landscape provides framework for identification of the project sites and developing interventions to be undertaken in this project.

1.3 Scoping of Districts and Divisions

Since this project is to address the issues derived from climate change impacts and to build resilience of the local community, vulnerability of the area is a key indicator in the process. In addition, WB-FBCCCR shall factor in forest availability as the implementing agency's jurisdiction is the recorded forest area. There are four indicators adopted for the preliminary screening exercise. The results are shown by landscape in Table 1.1.

Table 1.1 Scores Adopted for Prioritisation of Districts

Indicators	Score Definition	
% of Forests to Total Geographical Area of the District	1-20%: 1 20-40%: 2 40-60%: 3	60-80%: 4 80-100%: 5
% of Open Forest to the Total Forest Area	1-20%: 1 20-40%: 2 40-60%: 3	60-80%: 4 80-100%: 5
Vulnerability Score*	0.479 – 0.384: 1 0.574 - 0.489: 3 0.6-0.690: 5	
Average No of JFMCs in Range in the District	1-10: 1 11-20:2 20-30:3	30-40: 4 40+:5 After scoring 150%, weightage is given as JFMCs are the main actor in the implementation process

*Department of Science and Technology, Government of India. (2019-2020). Climate Vulnerability Assessment for Adaptation Planning in India Using a Common Framework. (<https://dst.gov.in/sites/default/files/Full%20Report%20%281%29.pdf>)
Source: JICA Survey Team

Table 1.2 Results of District Scoring

District	Vulnerability Score	Forest Area Score	Open Forest Score	JFM Score (Weighted)	Total
1. Hills and North Bengal					
Cooch Behar	3	2	5	1.5	11.5
Darjeeling (including Kalimpong)	3	4	3	1.5	11.5
Jalpaiguri (including Alipurduar)	5	3	3	1.5	12.5
Dakshin Dinajpur (currently South Dinajpur)	3	1	5	0	9
Uttar Dinajpur	5	1	5	0	11
2. Dry Lateritic and Alluvial					
Bankura	1	1	3	7.5	12.5
Burdwan (now it is divided into Paschim Bardhaman and Purba Bardhaman)	3	1	3	0	7
Birbhum	3	1	5	4.5	13.5
Hoogli	1	1	5	0	7
Howrah	3	1	5	0	9
Kolkata	3	1	5	0	9
Malda	5	1	3	0	9
Murshidabad	3	1	5	0	9
Nadia	5	1	4	0	10
Paschim Medinipur (including Jhargram)	1	2	3	1.5	7.5
Purba Medinipur	1	1	4	1.5	7.5
Purulia	3	1	3	7.5	14.5
North 24 Parganas	3	1	4	0	8
3. Deltaic					
South 24 Parganas	3	2	2	1.5	8.5

Source: JICA Survey Team

The higher the score in the above exercise, the higher the need for project intervention. Using the results of the above district-based scoring, divisions are also allotted of the scores. As shown in the table below, all the divisions in Hills and North Bengal landscape are falling under the very high priority category. In the Dry Lateritic and Alluvial landscape, eight divisions out of 15 divisions scored very high. This means that the need for interventions by the project is seen very high in these divisions. The rest of the divisions had scored moderately high. If the need arises to prioritise the divisions for investment, this scoring can be taken into consideration.

Table 1.3 Scoring of Divisions based on the Results of the District

Landscape	Divisions	District	District Wise Vulnerability Score	Ranking by Total Score
Hill and North Bengal	Jalpaiguri	Jalpaiguri	12.5	3
	Baikunthapur	Jalpaiguri	12.5	3
	Kurseong	Darjeeling	11.5	4
	Darjeeling	Darjeeling	11.5	4
	Kalimpong	Kalimpong*	11.5	4
	Darjeeling WL	Darjeeling	11.5	4
	Gorumara WL	Kalimpong*	11.5	4
	Jaldapara WL	Allipurduar**	12.5	3
	BTR (East)	Allipurduar**	12.5	3
	BTR (West)	Allipurduar**	12.5	3
	Cooch Behar	Coochbehar	11.5	4
	Raiganj SF	D&U Dinajpur***	10	5
Dry Lateritic and Alluvial	Nadia-Murshidabad	Murshidabad	9	6
	Birbhum	Birbhum	13.5	2
	Purulia	Purulia	14.5	1
	Kangsabati (N)	Purulia	14.5	1
	Kangsabati (S)	Purulia	14.5	1
	Jhargram	Paschim Medinipur	7.5	9
	Medinipur	Paschim Medinipur	7.5	9
	Rupnarayan	Paschim Medinipur	7.5	9
	Bankura (S)	Bankura	12.5	3
	Bankura (N)	Bankura	12.5	3
	Panchet	Bankura	12.5	3
	Burdwan	Purba Burdwan	7	10
	Durgapur	Paschim Burdwan	7	10
	Kharagpur	Paschim Medinipur	7.5	9
North 24 Parganas	North 24 Parganas	8	8	
Deltaic	South 24 Parganas	South 24 Parganas	8.5	7
	STR	South 24 Parganas	8.5	7

* Kalimpong District was created in 2017. Earlier, it was a part of Darjeeling. Thus, the score of Darjeeling was applied.

** Allipurduar District was created in 2014. Earlier, it was a part of Jalpaiguri. Thus, the score of Jalpaiguri was applied.

*** Raiganj SF comprised Dakshin and Uttar Dinajpur districts. Thus, the average of two districts are applied.

Source: JICA Survey Team

WBFD has proposed 23 territorial divisions, 6 wildlife divisions, and 5 functional divisions to be covered under the project. The list of divisions and the number of ranges and JFMCs that are covered under Phase 1 and proposed in WB-FBCCCR are given in the table below. Under the Phase 1 of the project, 138 ranges are covered out of 190 ranges. Under WB-FBCCCR, 90 ranges will be covered, which are mostly overlapping with Phase 1 ranges. The number of JFMCs to be supported under WB-

FBCCCR is 600, spread across the state and shall be selected by avoiding overlapping with Phase 1 JFMCs.

Table 1.4 List of Territorial Divisions and Wildlife Divisions Proposed for WB-FBCCCR

L a n d s c a p e	Divi sion s	Total of the State		Phase 1		WB- FBCCCR	
		R a n g e s	T o t a l o f J F M C	R a n g e s	T o t a l J F M C	R a n g e s	T o t a l J F M C
Hill and North Bengal	Jalpaiguri	8	61	7	25	2	8
	Baikunthapur	6	66	6	23	2	9
	Kurseong	5	46	5	16	2	6
	Darjeeling	8	80	8	3	3	11
	Kalimpong	9	64	0	0	3	9
	Darjeeling WL	7	31	5	6	2	4
	Gorumara WL	4	18	2	7	1	2
	Jaldapara WL	9	71	9	25	4	13
	BTR (East)	7	31	0	0	1	4
	BTR (West)	7	34	0	0	1	5
	Cooch Behar	6	25	6	3	1	3
Raiganj SF	6	0	6	0	1	0	
Dry Lateritic and Alluvial	Nadia- Murshidabad	4	2	4	0	1	1
	Birbhum	7	198	6	14	3	27
	Purulia	8	225	6	35	4	30
	Kangsabati (N)	5	246	4	30	4	33
	Kangsabati (S)	6	305	4	33	4	41
	Jhargram	12	474	4	28	6	64
	Medinipur	9	364	9	73	6	50
	Rupnarayan	5	222	5	52	4	30
Bankura (S)	12	646	12	51	8	88	

L a n d s c a p e	Divi s i o n s	Total of the State		Phase 1		WB- FBCCCR	
		R a n g e s	T o t a l o f J F M C	R a n g e s	T o t a l J F M C	R a n g e s	T o t a l J F M C
	Bankura (N)	10	543	10	59	6	74
	Panchet	5	232	5	50	4	32
	Burdwan	5	70	5	31	2	10
	Durgapur	2	22	2	10	1	3
	Kharagpur	8	254	8	26	4	34
Deltaic	North 24 Parganas	1	0	0	0	1	0
	South 24 Parganas	6	40	0	0	1	5
	STR	3	26	0	0	3	4
	Total	190	4,396	138	600	90	600

Source: WBFD

Five functional divisions include Purulia Extension Forest Division, Silviculture Division (Hills), Silviculture Division (North), Monitoring Division North, Monitoring Division South. Purulia Extension Forestry Division has been identified to promote Tree Plantation outside of Forest Area (TPOFA), as Purulia's acute condition of drought and soil erosion calls for intensive planting operation irrespective of land category.

1.4 Selection of Project Sites: Beat and JFMCs

Until now, the scoping has been done on the basis of prioritisation score. The proposed divisions are mostly falling within very high to moderately high priority divisions. On the other hand, overlapping of ranges may be inevitable in many locations. When intervention for a Phase 1 range is to be under WB-FBCCCR, beat level overlapping shall be avoided.

Furthermore, due to the nature of the project activities reflecting the landscape specificities, the site selection criteria have been proposed based on the objectives of the planned activities so that the project interventions can be implemented in the location where such interventions are needed and effective. In subsequent sections, site selection criteria will also be elaborated where relevant.

2. *Component 1 Ecosystem Based Climate Change Measures*

Project sites shall be selected during the project implementation based on the following criteria.

Table 2.1 Proposed Divisions and Site Selection Criteria for Component 1

Sub- component	Proposed Divisions	Site Selection Criteria
1.1 Hills and North Bengal Landscape	1. Darjeeling 2. Kalimpong	Improving quality of forest - Open and scrub area (minimum 10ha

Sub-component	Proposed Divisions	Site Selection Criteria
	3. Kurseong 4. Jalpaiguri 5. Baikunthapur 6. Cooch Behar 7. Darjeeling WL 8. Gorumara WL 9. Jaldapara WL 10. BTR West WL 11. BTR East WL 12. Raiganj SF	availability) – Available area for plantations – Areas where the project interventions are effective in reducing the damage of flood and landslide to the settlement area – Areas not covered by other projects – For TPOFA, minimum 2ha availability Eco DRR – Moderately steep slope (>15%) – Pre-condition: Management plan or working plan depicts the need for SMC structures.
1.2 Dry Lateritic & Alluvial Landscape	1. Bankura North 2. Bankura South 3. Panchet 4. Medinipur 5. Jhargram 6. Rupnarayan 7. Kharagpur 8. Purulia 9. Kangsabati (North) 10. Kangsabati (South) 11. Burdwan 12. Durgapur 13. Birbhum 14. Purulia Extension SF	Improving quality of forest • Open and scrub area (minimum 10ha availability) • Available area for plantations • Degradation of floral and faunal bio-diversity of the forest • Project interventions are effective in reducing soil erosion • Areas not covered by other projects • For TPOFA, minimum 2ha availability Eco DRR • Area largely affected by soil erosion • Priority area identified under the CAT Plan
1.3 Deltaic Landscape	1. South Parganas 2. Sundarbans Tiger Reserve	Biophysical criteria • Degraded mangrove area with vulnerability against frequent flooding Socio-economic criteria • Households affected by cyclone damage

* If the forest-based interventions for elephant-human conflict are to be taken up, the following criteria can be included: “Forest village having high number of households affected by elephant.”
 Source: JICA Survey Team

3. Component 2: Biodiversity Conservation

The divisions proposed for particular activities in Component 2 by WBFD and site selection criteria are shown in Table 3.1.

Table 3.1 Selection Criteria and Proposed Divisions for Component 2

Sub-component	Activity	Sub-Activities	Selection Criteria	Proposed Division
2.1 Hills and North Bengal Landscape	2.1.1 Human-wildlife conflict mitigation	2.1.1.1 Stress induced conflict risk reduction by wild animals	a) High incidence of HWC. b) Priority for strengthening measures for mitigation. c) High	Jalpaiguri, Baikunthapur, Kurseong, Cooch Behar, Darjeeling, Darjeeling WL, Gorumara WL, Jaldapara WL, BTR (East), BTR

Sub-component	Activity	Sub-Activities	Selection Criteria	Proposed Division
			number of JFMCs in the fringe areas.	(West)
		2.1.1.2 Support communities for HW mitigation.		Kurseong, Kalimpong, Darjeeling, Darjeeling WL
		2.1.1.3 Pilot (Eco sensitive Zone) plantation with non-palatable/repulsive species		Gorumara WL, Jaldapara WL
	2.1.2 Species conservation programme	2.1.2.1 Species recovery programme for local RET (North)	a) Presence of target rare and endangered plant or animal species which have high priority for conservation (including endangered species).	Jalpaiguri, Baikunthapur, Kurseong, Darjeeling, Cooch Behar, Darjeeling WL, Gorumara WL, Jaldapara WL, BTR (East), BTR (West)
	2.1.3 Studies on wild animals and their behaviour	2.1.3.1 Study on 5 spp. of Lesser Cats in North Bengal	a) Presence of target rare and endangered plant or animal species which have high priority for conservation. b) Similar activities were not funded enough before. c) Research/study products to be used in the project activities or future activities.	BTR(East), BTR(West), Jaldapara Wildlife-III Division.
2.2 Dry Lateritic & Alluvial Landscape	2.2.1 Biodiversity conservation through people's participation in protected area	2.2.1.1 Bethuadahari WLS	a) Presence of distinct genotypes of local species population with localized and landscape-level threats.	Nadia-Murshidabad

Sub-component	Activity	Sub-Activities	Selection Criteria	Proposed Division
		2.2.1.2 Ballvpur WLS	<p>b) Proximity to urban centres, receive relatively high number of visitors, and serve as an opportunity for conservation related education of the civil society.</p> <p>c) Need an intensive management in and outside of PA system with people's participation.</p> <p>d) Need for strengthening the stake of the neighbouring communities in conservation of the PAs.</p> <p>e) Shortage of fund (i.e., past 3 years continuous fund shortage was reported).</p>	Birbhum
	2.2.2 Conservation for Smaller Mammals	2.2.2.1 Habitat Improvement	a) Presence of target rare and endangered plant or animal species which have high priority for conservation.	<p><Gray Wolf, Striped Hyena, Wild Boar>Purulia, Jhargram, Medinipur, Bankura (South)</p> <p><Wild Boar and Gray Wolf>Birbhum</p> <p><Golden Jackal>Bankura (North and South) or any other divisions where their habitat is identified</p>

Sub-component	Activity	Sub-Activities	Selection Criteria	Proposed Division
		2.2.2.2 Conservation awareness generation		Purulia, Jhargram, Medinipur, Bankura (South) or other divisions based on identification of critical habitat
	2.2.3 Human-Wildlife Conflict Mitigation	2.2.3.1 Rescue Centre for elephants including study of their behaviour	a) Availability of sizable land and presence of capable personnel and facilities for creating and managing the centre for rescue and rehabilitation of problematic elephants. b) Regional-level high needs for mitigation of Human Elephant Conflict. c) The land shall be selected where the existing uses of land and natural resources are not affected.	West Bengal Zoo Authority(WBZA) , Jhargram (Mayurjharna Elephant Reserve)
		2.2.3.2 Stress induce conflict risk reduction by wild animals	a) High incidence of HWC. b) Priority for strengthening measures for mitigation. c) High number of JFMCs in the fringe areas.	Bankura (North), Bankura (South), Panchet, Medinipur, Jhargram, Rupnarayan, Kharagpur, Purulia, Kangsabati (North), Kangsabati (South), Burdwan, Durgapur, Birbhum.
		2.2.3.3 Tracking of elephant route	a) Elephant infested	Medinipur, Rupnarayan,

Sub-component	Activity	Sub-Activities	Selection Criteria	Proposed Division	
		through radio collaring	divisions of South Bengal	Kharagpur, Jhargram, Bankura (North), Bankura (South), Panchet, Purulia, Kangsabati (North), Kangsabati (South), Birbhum, Durgapur, Burdwan.	
		2.2.3.4 Enhancement of tranquilizer equipment for wild animals to be kept in Airavat vans			
		2.2.3.5 Installation of (Early Warning System (EWS) for wild elephants	a) High incidence of HWC. b) Priority for strengthening measures for mitigation. c) High number of JFMCs in the fringe areas.		
		2.2.3.6 Development of software application for compensation for depredation by wild animals	a) Elephant infested divisions of South Bengal		To be used in any Forest Divisions
		2.2.3.7 Installation of Elephant Proof Trench (EPT) in South-West Bengal	a) High incidence of HWC. b) Priority for strengthening measures for mitigation. c) High number of JFMCs in the fringe areas.		Medinipur, Rupnarayan, Kharagpur, Jhargram, Bankura (North), Bankura (South), Panchet, Purulia, Kangsabati (North), Kangsabati (South), Birbhum, Durgapur, Burdwan.
2.2.4 Species conservation programme	2.2.4.1 Dolphin conservation programme	a) Presence of target rare and endangered plant or animal species which have high priority for conservation. b) Presence of required	Burdwan, Nadia-Murshidabad		
	2.2.4.2 Breeding and releasing of Indian Pangolin			Alipore Zoological Park, Purulia and Jhargram, and other divisions to be identified if necessary.	
	2.2.4.3 Breeding			Alipore Zoological	

Sub-component	Activity	Sub-Activities	Selection Criteria	Proposed Division
		and releasing of Fishing Cat	infrastructure to take up the work.	Park, South 24 Parganas, and other divisions to be identified if necessary.
		2.2.4.4 Breeding and releasing of Indian Vulture		Alipore Zoological Park, South 24 Parganas, and other divisions to be identified if necessary.
		2.2.4.5 Species recovery programme for local RET (South)		Burdwan, Jhargram, Bankura (North)
2.3 Deltaic Landscape	2.3.1 Biodiversity conservation through people's participation in protected area	2.3.1.1 Chintamani Kar Bird Sanctuary	<p>a) Presence of distinct genotypes of local species population with localized and landscape-level threats.</p> <p>b) Proximity to urban centres, receive relatively high number of visitors, and serve as an opportunity for conservation related education of the civil society.</p> <p>c) Need an intensive management in and outside of PA system with people's participation.</p> <p>d) Need for strengthening the stake of the neighbouring communities in conservation of the PAs.</p>	South 24 Parganas
		2.3.1.2 Bibhutibhushan WLS		North 24 parganas

Sub-component	Activity	Sub-Activities	Selection Criteria	Proposed Division
			e) Shortage of fund (i.e., past 3 years continuous fund shortage was reported).	
	2.3.2 Human-wildlife conflict mitigation	2.3.2.1 Stress induced conflict risk reduction by wild animals	a) High incidence of HWC. b) Priority for strengthening measures for mitigation. c) High number of JFMCs in the fringe areas.	STR
		2.3.2.2 Veterinary facility in Sundarbans	a) Lack of veterinary facilities. and needs for immediate development of veterinary capacity.	STR
	2.3.3 Studies on wild animals and their behaviour	2.3.3.1 Assessment of aquatic biodiversity in Sundarbans and territorial waters	a) Presence of target rare and endangered plant or animal species which have high priority for conservation. b) Similar activities were not funded enough before. c) Research/study products to be used in the project activities or future activities.	STR, 24-Parganas South
		2.3.3.2 Studies suggested by Central Asian Flyway	a) Presence of target rare and endangered plant or animal	STR, 24-Parganas South, 24-Parganas North, East Medinipur,

Sub-component	Activity	Sub-Activities	Selection Criteria	Proposed Division
			<p>species which have high priority for conservation.</p> <p>b) Presence of target habitat for target migratory bird species</p> <p>c) Similar activities were not funded enough before.</p> <p>d) Research/study products to be used in the project activities or future activities.</p>	Birbhum, Nadia, Murshidabad, Baikunthpur, Howrah, Jalpaiguri, Jaldapara, BTR

Source: JICA Survey Team

4. Component 3: Livelihood Improvement

4.1 Site Selection and Identification of JFMCs

JFMCs will be selected as a unit of project implementation from the area where Component 1 and 2 activities are implemented. Selection criteria may include 1) consent of the JFMC members; and 2) keen interest in JFM and collective action towards human-wildlife conflicts. The distribution of JFMC and divisions by landscape are shown below.

Table 4.1 Identification of JFMCs

Landscapes	Division/DMU	Range/FMU	JFMCs
Hills and North Bengal	Darjeeling, Kurseong, Kalimpong, Wildlife, Darjeeling, Baikunthapur, Jalpaiguri, BTR East, BTR West, Cooch Behar, Jaldapara WL, Gorumara WL	TBD	74 (JFMC-56, former EDC-18)
Dry Lateritic and Alluvial	Bankura North, Bankura South, Panchet, Kangsabati North, Kangsabati South, Purulia, Burdwan, Durgapur, Medinipur, Jhargram, Rupnarayan, Kharagpur, Birbhum, Nadia, Murshidabad	TBD	517 (JFMC-516, former EDC-1)
Deltaic	24 Parganas South, Sundarbans Tiger Reserve	TBD	09 (JFMC-5, EDC-4)
Total	31 (includes, 23 Territorial, 6 wildlife, 1, 1 extension)	90 (85 territorial/wildlife, 5 functional)	600 (JFMC-577, former EDC- 23)

Source: JICA Survey Team

4.2 Selection Procedure and Selection Criteria of JFMCs

JFMC will be selected as a unit of project implementation from the area where Component 1 and 2 activities are implemented. The selection criteria will be finalised by PMU before the initiation of actual selection process. Based on the criteria, FMU will select JFMCs for the project. The proposed selection criteria include the following.

(1) Selection Criteria

- Willingness of JFMC members for participation in the project
- Keen interest in JFM and collective action towards forest protection and human-wildlife conflicts
- High dependency on forest resources
- Not received support from Phase I
- Constituting a cluster
- Have protected forests on their own will as a collective action
- Vulnerable to climate change
- Minimum area in Hills and North Bengal Landscape and Dry Lateritic & Alluvial Landscape for intervention should be at least 10 ha

4.3 Selection Criteria for Types of Infrastructures to be Considered under Entry Point Activity/ Community Development Activity (EPA/ CDA)

Since this project is aiming at enhancing the climate change resilience at the community level, thus, CDA, which is to be supported by the project, shall also be relevant to the project objective. Furthermore, the activity, which has benefits for only a few people, should be avoided. During the microplanning, the community will be encouraged to suggest types of activities to be undertaken. PMU will elaborate the planning process, selection criteria of community development activities, and implementation method in CDA guideline prior to the commencement of microplanning. The indicative list of community infrastructure is given in the table below.

Table 4.2 Indicative List of CDAs

Landscapes	Recommended Community Infrastructures	Indicative Selection Criteria
Hills and North Bengal	Foot path, processing centre/ aggregation centre for IGA products, solar light, ecotourism facilities.	<ul style="list-style-type: none"> • Addresses problems that are caused by climate change/natural disaster. • Activity selected must benefits maximum number of Households. • It should not have negative impact on natural resources and environment, society (tradition, culture and etc.). • It may contribute to income generation too. • Activity does not require purchase of land.
Dry Lateritic and Alluvial	Small check dams, submersible tube wells with irrigation channel, water tank with outlet, processing centre/ aggregation centre for IGA products, solar light.	
Deltaic	Flood defence infrastructure, tube well, processing centre/ aggregation centre for IGA products, community halls, healthcare centre, foot path.	

Source: JICA Survey Team

4.4 Selection Criteria for Technical Agency to Manage IGA Fund

The agency shall be selected through LCB/ QCBS. In addition to the assessment of the technical proposal and financial proposal, following shall be included as additional selection criteria.

- Agency should be registered as society/NGO or Micro Finance Institution (MFI)
- Should have annual portfolio of 50.00 crores.
- Agency which competes in QCBS process of selection will be selected.
- Should have presence in West Bengal for a minimum of 5 Years operation in microfinance, enterprise development and marketing support.

4.5 Selection Criteria for Extension Worker

Extension Worker (EW) shall be engaged to directly work with community and recruited from public. The following qualification shall be referred as selection criteria for the same.

Table 4.3 Selection Criteria for Extension Worker

Particular	Description
Qualification	<ul style="list-style-type: none">• Minimum class XII pass.• active member of JFMC.• participated in JFM activities like forest protection, awareness building on nature/forest etc.• good rapport with JFMC members, existing SHG members, local Forest Department officials, local line department officials, panchayat.• Aware of government schemes/programs etc.• preferably have some experience in working with the similar government assisted projects/ programs.
Knowledge of Language and Other Skills	<ul style="list-style-type: none">• Fluency in spoken Bengali/ Nepali with functional knowledge of English.• Good communication skills• Computer literacy

Source: JICA Survey Team

END

Attachment 3: Detailed Scope of Work

1. Component 1 Ecosystem Based Climate Change Measures

1.1 Overview of the Component 1 Ecosystem Based Climate Change Measures

(1) Component Objective

The objective of the component is: to enhance forest ecosystem services (multiple functions of forests), reduce disaster risk, and enhance community resilience against climate change impacts.

(2) Rationale

In order to reduce the adverse impacts of climate change in each landscape, the component to mitigate the causes of frequently occurring disasters (flooding in North Bengal/ Sundarbans, drought in South Bengal) should be implemented, the project will effectively utilise multiple functions of forest. In order to do that, forest treatment needs to be properly zoned for the specific purpose.

WB-FBCCCR will support to prepare the Catchment Treatment (CAT) plan for the entire forest areas of South Bengal. The implementation of the plan will demonstrate the maximum potential to reduce soil erosion and increase water retention and harvest potential. Biological measures shall be undertaken with engineering measures in order to make the result more effective. Construction of check dams shall be effectively combined with brushwood check dam and contour trench on the upper parts, as well as earthen bunding in the lower parts. Forest plantation established on the upper part of the check dams is expected to show better growth by enhanced moisture. The lower part of the check dam will have better moisture for agriculture. Although CAT plan is prepared for the forest area, treatment will be undertaken in forest fringe areas wherever required. Strip plantation will be undertaken on river/roadside to reduce the flow of waters with providing benefits to beneficiary groups. The CAT plan is expected to be mainstreamed in Wbfd through the implementation of WB-FBCCCR.

In Sundarbans, frequent flooding caused by sea level rising and cyclone attacks is one of the most challenging topics in West Bengal. Although it is in small scale, the attempts will be done by WB-FBCCCR to use bamboo structures to restore mangroves for mitigating the damages on embankment. This approach is currently considered to be most promising with some successful cases abroad. Some attempts are found with local investment. Taking advantage of experience of JFM approach, mangrove restoration with bamboo structure will incorporate community-based approach combined with strengthening livelihoods and safeguards of the community in Component 3 (community development activities, convergence, and income generation activities).

In order to increase community resilience, the plantation model in WB-FBCCCR will be mostly mixed plantation with NTFP species where local populations will benefit and will be able to protect the community for a long term. Multilayer vegetation shall protect the soil in a better way on the catchment. NTFP harvest will be attempted with pilot base and local knowledge by community healers will be documented for future use.

The project needs to be well-planned, monitored, and evaluated. WB-FBCCCR will newly introduce the Range Forest Project Implementation Plan (RFIP), a range-wise five-year plan of project implementation, which enables project management to oversee the project activities for a longer period.

(3) Component Structure

The structure of Component 1 is shown in the table below.

Table 1.1 Structure of Component 1

Sub-component	Project Activity
1.1 Hill & North Bengal Landscape	<p>1.1.1 Production of Quality Planting Materials 1.1.1.1 Upgrading Central Nurseries and Maintenance 1.1.1.2 Production of Quality Planting Material (QPM)</p> <p>1.1.2 Improving Quality of Forests 1.1.2.1 Creation of New Seed Production Areas (SPAs) and Maintenance 1.1.2.2 Preparation of Range Forest Project Implementation Plan 1.1.2.3 Plantation in Degraded Forest Areas a) Sal Plantation in North Bengal b) Miscellaneous Plantation in North Bengal 1.1.2.4 Tree Plantation Outside of Forest Areas (TPOFA)</p> <p>1.1.3 Eco DRR Activities 1.1.3.1 Embankment Protection</p> <p>1.1.4 Green Laboratory Initiatives (1) Nature Study in Forests by Students 1.1.4.2 Nature and Forests Program Engaging Education/ Research Institutions</p>
1.2 Dry Lateritic & Alluvial Landscape	<p>1.2.1 Production of Quality Planting Material 1.2.1.1 Upgrading Central Nurseries and Maintenance 1.2.1.2 Production of Quality Planting Material (QPM)</p> <p>1.2.2 Improving Quality of Forests 1.2.2.1 Preparation of Range Forest Project Implementation Plan 1.2.2.2 Assisted Natural Regeneration (ANR) of degraded sal forests (RDF) (Coppicing) 1.2.2.3 Plantation in degraded forest areas a) Sal plantation b) Miscellaneous plantation of native species 1.2.2.4 Tree plantation outside of forest areas (TPOFA)</p> <p>1.2.3 Eco DRR Activities 1.2.3.1 Preparation of CAT Plans and site identification (including procurement of vendor) 1.2.3.2 Soil and moisture conservation works based on CAT Plans</p> <p>1.2.4 Green Laboratory Initiatives 1.2.4.1 Nature Study in forests by Students</p>
1.3 Deltaic Landscape	<p>1.3.1 Community Resilience Measures in Sundarbans 1.3.1.1 Preparatory works including site selection 1.3.1.2 Preparation of designs of mangrove restoration with traditional defence measures 1.3.1.3 Implementation of pilot activities 1.3.1.4 Evaluation of pilot activities 1.3.1.5 Preparation of plan for enhanced models 1.3.1.6 Installation of enhanced restoration models</p>

Sub-component	Project Activity
	1.3.2 Green Laboratory Initiative 1.3.2.1 Nature Study in forests by Students 1.3.2.2 Nature and Forests Programme engaging Education/ Research Institutions

Source: JICA Survey Team

1.2 Site Selection

Project sites shall be selected during the project implementation based on the criteria as per Attachment 2.

1.3 Sub-Component 1.1: Hills and North Bengal Landscape

(1) Activity 1.1.1 Production of Quality Planting Material (QPM)

(a) Activity 1.1.1.1 Upgrading Central Nurseries and Maintenance

Central nursery facilities constructed by the state plan and Phase 1 of WBFBCP will be updated to ensure continuous production of QPM for planting activities under the project and under state government schemes.

Table 1.2 Description of Activity 1.1.1.1 Upgrading Central Nurseries and Maintenance in Hills and North Bengal Landscape

Upgrading of Central Nursery	Budget and Amount
Painting/replacement of the MS Stand, cleaning drainage, repair of pipelines, replacement of agro net shed, procurement of hycopots of different sizes, installing sprinklers, replacement/repair of pump and deep tube well, and other miscellaneous work items.	INR 3,000,000 per unit 9 units

Source: JICA Survey Team

(b) Activity 1.1.1.2 Production of Quality Planting Material (QPM)

Central nurseries with enhanced capacities would be utilised for producing QPMs of local species including Rare, Endangered and Threatened (RET) species. Propagation protocols will be organised for selected species and mother plus trees to produce valuable NTFP products will be identified. In order to increase survival rates of locally RET species, one and half-year old taller QPMs shall be produced.

Table 1.3 Description of Activity 1.1.1.2 Production of QPM of Native and RET Species in Hills and North Bengal Landscape

Project Activities	Budget and Amount
Procurement of seed, seed dibbling, transplantation in containers, application of insecticide and fertilizers, sorting shifting grading watering, forking and maintenance over two or more growing seasons.	INR 15 for 1.5-year old taller QPMs 2 million QPM will be produced over five years (INR 200,000 Capacity in each central nursery)

Source: JICA Survey Team

(2) Activity 1.1.2 Improving Quality of Forests

(a) Activity 1.1.2.1 Creation of New Seed Production Areas (SPAs) and Maintenance

In order to ensure seed production of tree species of economic importance in the long run, seed production areas (SPAs) shall be developed. Genetically superior propagules shall be selected and planted in the SPAs.

Table 1.4 Description of Activity 1.1.2.1 Creation and Maintenance of Seed Production Areas (SPAs) in Hills and North Bengal Landscape

Project Activities	Budget and Amount
Geo-mapping of SPAs, Maintenance of Seed Trees, Selection/creation of new SPAs	INR 163,440 (over a period of four years) 50 Areas

Source: JICA Survey Team

(b) Activity 1.1.2.2 Preparation of Range Forest Project Implementation Plan (RFIP)

As a preparatory work of the project implementation, RFIP, which is a five-year plan for project activities in each range related to improvement of forest quality, will be prepared based on the mouzas prescribed in the working plan in each division. RFIP will be prepared by DMU with the support of FMUs and approved by PMU. The planning template in a simple tabular form will be developed by PMU/ PMC prior to the range level planning exercise.

(c) Activity 1.1.2.3 Plantation in Degraded Forest Areas

1) Sal Plantation

In North Bengal, plains and foothills, blanks and degraded lands were damaged due to grazing, floods, change of river courses, infestation by weeds, encroachment, illicit felling, etc., are found in small pockets. Since sal (*Shorea robusta*) grows better with associates, plantation of sal with sal associates shall be established. The description of activity is shown below.

a) Objective:

To produce quality timber with long rotation, plantation of sal (*Shorea robusta*) with other associates shall be established. JFMC members can benefit from sal associate species.

b) Soil and Climate Conditions:

Alluvial plains of the Teesta, Torsha, and Mahananda rivers, having problems of water logging, Terai soil of the Himalayan foothills with moderately deep to moderate alluvium deposit of course to fine loamy texture.

c) Sal Associate Species:

Sal plantations mostly have Kawla (*Michilus* sp.), Lahasme (*Alpanamixis polystachya*), Sidha (*Lagerstroemia parviflora*) Kanchan, Sonolu (*Cassia fistula*) Lali (*Amoora wallichii*), Babera (*Terminalia belerica*) Pakasaj (*Terminalia tomentosa*), Amloki (*Emblica officinalis*), Chiloune (*Schima wallichii*), Champ (*Michelia champaca*) Chilaasi, Toon for principal model.

Other species include: *Premna* spp, *Dillenia* sp., Odal (*Sterculia villosa*), Gamar (*Gmelina arborea*), Dabdabe (*Garuga pinnata*), and Sidha (*Lagerstroemia parviflora*).

d) Plantation Design:

Twelve sal associate species shall be mixed planted in blocks (4 x 4 block, 2 block lines of 2 species each). Sal associate species shall be planted in for hard wood timber for plywood/sawmills and veneering industries and NTFP for villagers. Description of sal plantation models in North Bengal is given in Attachment 8.6.1.

e) Implementation Structure:

- Based on RFIP, the plantation (sal and miscellaneous plantations) will be undertaken by DMU through FMU.
- FMU will contact JFMC, where the planned plantation is located within their boundary and plan the plantation (area, size, species, required labour, timing, etc.).
- FMU will support the reorganising/reconstitution of JFMC, including its familiarisation of project, and securing a signed agreement (MOU) (Activities are prescribed in Component 3).
- DMU will implement the plantation with FMU based on the protocol. Seedlings are provided by central nurseries.
- JFMC will provide a workforce to the plantation to implement the activities (preparatory works, plantation and three years maintenance). JFMC will protect the plantation based on JFMC resolution 2017.

f) Protection and Maintenance:

The benefit will go to the JFMC members who are engaged in protection and maintenance of the plantation. A two-metre space between the planting lines may be utilised for intercropping with the medicinal herbs in the first three years of the plantation by JFMC members/ forest villagers who are engaged in cleaning, weeding, and maintenance ensuring the planted trees are not damaged but are being protected.

Total Extent: 100 ha

Table 1.5 Details of Proposed Target Area

Plantation Model (Working Circle)	Area Proposed (ha)	Minimum Area (ha)	District	Divisions
Sal plantation (sal working circle)	100	2 ha per JFMC	Jalpaiguri	Jalpaiguri Baikunthapur Jaldapara WL
			Alipurduar	BTR East BTR West

Source: JICA Survey Team

g) Implementation Schedule

Table 1.6 Implementation Schedule of Activity 1.1.2.3 Plantation in Degraded Forest Areas (Sal Plantation)

Activity	Schedule
Preparatory works and plantation (survey clearance, pit making, Dibbling of Sal seeds, filling with seedlings, cleaning, mulching, making fire lines, watch and warden provision, fencing)	1/2025-3/2026 (Batch I) 1/2026-3/2027 (Batch II) 1/2027-3/2028 (Batch III)
Maintenance (three years, weeding, mulching, making fire line, watch and ward provision)	4/2026-3/2029 (Batch I) 4/2027-3/2030 (Batch II) 4/2028-11/2030 (Batch III)

Source: JICA Survey Team

h) Locations:

Plantation sites are to be selected from the area near the Forest Village with JFMCs.

Minimum Target Area: 2 ha per JFMC

Maximum Target 10 ha per JFMC

2) Miscellaneous Plantation in North Bengal

In North Bengal, similar to sal plantation, on small pockets plains, blanks, and degraded lands found in foothills, blanks and degraded lands, miscellaneous plantations with native species shall be established.

a) Objective:

Soil conservation, to increase production of teak with associates, and to create benefit of NTFP to local people, poles, and firewood.

b) Species:

Schima wallichii, Michelia champaca, Amoora rohituka, Amoora wallichii, Gmelina arborea, Cedrela toona, Terminalia tomentosa, Terminalia myriocarpa, Chukrassia tabularis, Kigelia pinnata, Duabanga sonneritoides, Cinnamomum cecidodaphne

Sites prone to water logging; *Bischoffia javanica, Terminalia arjuna*

In the middle hills, the principal species will include *Machilus spp., Michelia spp., Alnus nepalensis, Betula alnoides, Engelhardia spp., Bucklandia populnea*

c) Applicable Plantation Model:

The applicable plantation models as per the working plan of the concerned division is in **Attachment 8.6.2.**

d) Target Area:

Table 1.7 Target Area of Sal Coppicing in North Bengal

Plantation Model	Area Proposed (ha)	Minimum Area (ha)	District	Divisions
Miscellaneous plantation	250	2 ha 5 ha max per JFMC	Darjeeling	Darjeeling Kurseong Kalimpong
			Jalpaiguri	Jalpaiguri Baikunthapur Jaldapara WL Gorumara WL
			Alipurduar	BTR East BTR West
			Cooch Behar	Cooch Behar

Source: JICA Survey Team

e) Implementation Structure

Same as in Activity 1.1.2.3.

f) Protection and

Same as in Activity 1.1.2.3.

g) Implementation Schedule

Table 1.8 Implementation Schedule of Activity 1.1.2.3 Plantation in Degraded Forest Areas (Miscellaneous)

Activity	Schedule
Preparatory Works and Plantation (survey clearance, pit making, filling with seedlings, cleaning, mulching, making fire lines, watch and warden provision, fencing)	1/2025-3/2026 (Batch I) 1/2026-3/2027 (Batch II) 1/2027-3/2028 (Batch III)
Maintenance (three years, weeding, mulching, making fire line, watch and ward provision)	4/2026-3/2029 (Batch I) 4/2027-3/2030 (Batch II) 4/2028-11/2030 (Batch III)

Source: JICA Survey Team

(d) Activity 1.1.2.4 Tree Plantation Outside of Forest Areas (TPOFA)

a) General Description

Plantations will be taken up on available lands on the flanks of roads, rivers, or canals with a minimum viable area for the plantation work which is 1.25 ha (1.25 km roadside/canal side with four rows of strip plantation, double row on each side with a spacing of 2.5 m x 2.5 m). TPOFA will, in principle, follow the guideline prepared in the West Bengal Forest and Biodiversity Conservation Project.

b) Beneficiary of Plantations

The beneficiary of the plantation can be the: 1) Forest Department, 2) local self-government (Gram Panchayat/ Panchayat Samiti), 3) individuals, and 4) government agencies (land donor, e.g., PWD for roadside, Irrigation Department riverside, government educational institutes, health centres).

c) Method of Implementation:

DMU/ FMU will contact Bon-o-Bhumi Sanskar Sthayee Samiti (BBSSS), Gram Panchayat (GP) and Zilla Parishad (ZP) Rural Development and Panchayat Raj Department/ government educational institutes, health centres, etc., to have a clear idea about land availability for TPOFA.

FMU, in consultation with GP, will prepare the lists of beneficiaries and the nominees of beneficiaries for the Executive Committee (EC) from the 1) Sabhapati or any member of Bon-o-Bhumi Sanskar Sthayee Samiti nominated by the Sabhapati, 2) Gram Pradhan or any member of local Gram Panchayat(s) as may be nominated by the Pradhan(s), 3) Elected representatives of beneficiaries (not exceeding six), and 4) Beat Officer - Member Secretary.

In the forest fringe area, JFMC can be a beneficiary group. The villages, which already have a few functional SHGs, who can take up nursery activities for plant production, may also be considered. In case of Individual Beneficiary, Beneficiary Groups (BG) will be formulated as a cluster which will benefit from the plantation (preferably in between 6-25 members).

The technical and financial support for the same will be provided by FMU as per the norms of the project (creation of plantation and three-year maintenance).

d) Plantation Model:

Table 1.9 Description of Plantation Model for TPOFA Applicable in Hills and North Bengal Landscape

<p>Target area: Blank available lands owned by 1) local self-government (Gram Panchayat/ Panchayat Samiti), 2) individuals, and 3) other government agencies, PWD, Irrigation Department, government educational institutes, health centres, etc. Beneficiary: JFMC or Beneficiary Group formed in each case</p>
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Spacing: 2.5 m x 2.5 m (South Bengal/ SB), 2 m x 2 m (North Bengal/ NB)
 1,600 trees/ha (SB), 2,500 trees/ha (NB)
 Barbed wire fencing
 Three years maintenance
 Application of insecticide and other chemicals
 Cleaning five times/year and mulching four times/year in the first year
 Species : specified by MoEFCC (Attachment 35, No. 4 of ICFRE) and other suitable local species as per soil conditions.

Source: WBFD

e) Transfer of Plantation

After completion of the third year maintenance, the plantation will be handed over to the Gram Panchayat (GP). Following the transfer of plantations to the GP, the Beneficiary Group (BG) will have right to enjoy the benefits from the plantations sustainably but will not acquire any other right on the land.

The above provisions are related to the transfer of plantations and distribution of sale proceeds; however, this would not be applicable in case of plantation (block/strip) created by the government educational institute, health centres, etc.

f) Target Area:

Table 1.10 Target Area of Tree Plantation outside of Forest Area in Hills and North Bengal Landscape

Plantation Model	Area Proposed (ha)	Minimum Area (ha)	Divisions
Tree plantation outside of forest area (Strip plantation)	250	5	Raiganj Social Forestry Division

Source: WBFD

(3) Activity 1.1.3 Ecosystem-based Disaster Risk Reduction (Eco DRR) Activities

(a) Activity 1.1.3.1 Embankment Protection

Reinforced cement concrete (RCC) check dam structures will be constructed for catchment protection to control flooding in the protected area (PAs) of Hills and North Bengal. The check dams prevent stream bank erosion, check landslides, stabilise hill slopes, and reduce the chance of flooding in agricultural fields by hilly torrents. Plantations above the check dams and drainage line treatments in downstream shall be undertaken. Grass will be planted along the outlets and bunds along the embankments are created for large and medium check dams. Local communities as well as wildlife shall be benefited by the protection. The indicative drawing of the structure is provided in Attachment 8.6.3.

In hilly areas, the streams/ channels are a perennial flow of water. A check dam is a structure made up of RCC, where water can be checked as it flows allowing extra water to flow above the structure. A check dam is going to reduce the flow velocity, allowing sediment to settle out. A check dam is a linear structure constructed perpendicular to concentrated flows across the waterway to control erosion.

The check dams are constructed for the purpose of holding excess run-off water by creating obstructions of suitable size. The check dams are proposed in three types by length (Large – 40 mt. span, Medium – 24 mt. span, and Small – 12 mt. span) depending upon the width of the stream/ channels. This will vary from place to place, so before implementation of the project, a detailed project report is to be prepared looking at the site conditions.

Upper reaches are treated with boulder sausage work and grass planting works where bigger boulders are used to stabilise the slopes. Both sides of the streams require boulder sausage work/ loose boulder structures to protect the soil to protect irrigation channels so that the water to flow to the lower command areas. Both embankments need to be protected from high water flow during the rainy season and vegetative cover to be given to support the embankment to be more stable without distressing nature. Generally, series of such boulder sausage work are constructed. These structures slow down the run-off and water during the rainy season is harvested. These have been proven very useful for checking soil erosion. The work is labour intensive and generates employment for the local people. Traditional species will be helpful for checking erosion and stability to the loose boulder structures in the boulder sausage work.

This type of structure does not have storage of water. It will check the velocity of water and allow water to overtop the structure so that water flows down to another structure and reach the ground with less velocity to check erosion. It can provide irrigation channels in both sides based on the requirement of the villagers for irrigation purposes. Irrigation channels can be made at higher levels of land for water supply in other seasons.

a) Implementation Structure

PMU will plan the embankment protection with the respective DMUs. PMU/DMU will float the Tender Notice for bidding of the construction work and the Forest Department will directly conduct labour for the plantation work.

b) Implementation Schedule

Table 1.11 Implementation Schedule of Activity 1.1.3.1 Embankment Protection in the Protected Area

Activity	Schedule
Preparation and construction (Maintenance is up to three years after the construction)	9/2024-3/2025 (Batch I) 9/2025-3/2026 (Batch II) 9/2026-3/2027 (Batch III)

Source: JICA Survey Team

(4) Activity 1.1.4 Green Laboratory Initiatives

(a) Activity 1.1.4.1 Nature Study in Forest Areas by Students

Nature study by students shall be undertaken with schools. The Forest School in Kurseong and SFTI Hizli Kharagpur shall be utilized for the purpose. 15 students from college and university including international students will be supported over 2 years period. PMC will support PMU in developing the programme.

(b) Activity 1.1.4.2 Nature and Forests Programme Engaging Education/ Research Institution

Collaborative research and awareness programmes will be conducted in situ in the themes relevant to ecosystem-based disaster reduction and prevention, climate change and resilience. The following topics may be considered under this activity. PMC will support PMU in developing the research programme and facilitate coordination between the concerned research/ academic institutions both in India and overseas such as Institute of Global Environmental Strategy (IGES), Indian Institute of Forest Management (IIFM) and etc.

- Development of PES mechanism in the Hills & North Bengal Landscape with Institute of Global Environmental Strategy
- Pilot studies on REDD+ in the Hills

- Study on Ecology of Small Mammals with Hiroshima University

In this activity, India-Japan academic consortium to be established as collaboration. If the effect of the researched method is confirmed, that method to be reflected in the activities and the policy on climate change countermeasures in the state and other projects, and expanded to other states.

1.4 Sub-Component 1.2 Dry Lateritic and Alluvial Landscape

(1) Activity 1.2.1 Production of Quality Planting Material

Same as in Section 8.6.1. Activity 1.1.1 Production of Quality Planting Materials. (Under this activity, 4 million QPM will be produced over five years.)

(2) Activity 1.2.2 Improving Quality of Forests

(a) Activity 1.2.2.1 Preparation of Range Forest Project Implementation Plan (RFIP)

As occurred in Hill and North Bengal, preparatory work for the project implementation, five-year plan for project activities related to improvement of forest quality and restoration activities (sal coppicing, sal plantation, and miscellaneous plantation) will be prepared at each range based on the mouzas prescribed in the working plan in each division. The planning template in a simple tabular form will be developed by PMU/ PMC prior to the range level planning exercise.

(b) Activity 1.2.2.2 Assisted Natural Regeneration (ANR) of Degraded Sal Forests (RDF) (Coppicing)

1) Objectives:

Sal forest (5B/C1c) of southern West Bengal has been degraded due to grazing and forest fires. Although majority of such degraded forests has been regenerated, some degraded areas still remain; thus, artificial assisted natural regeneration is needed.

To enhance water retention of the catchment and reduce soil erosion by increased forest cover, ANR of degraded sal forests shall be undertaken by coppicing. Provision of some firewood for local communities and increase of carbon sequestration in the form of biomass and soil organic carbon shall also be expected.

a) Description of Activity:

The outline of the activity and methods of implementation are as below.

Table 1.12 Description of Activity 1.2.2.2 Assisted Natural Regeneration of Degraded Sal Forests (Coppicing) in Dry Lateritic and Alluvial Landscape

Project Activities	Budget and Amount
(i) Coppicing	INR 13,800 per ha
(ii) Multiple Shoot Cutting (MSC) at 3rd year	INR 20,000 per ha
Treatment site: Degraded sal forest (moderate or high density) on Red lateritic soil - undulating topography with low soil depth, poor capacity for rainwater retention, prone to severe soil erosion.	1,000 ha in total

Source: JICA Survey Team

The silviculture operations technique is to be adopted are coppicing and multiple shoot cutting.

- Coppicing

Degraded malformed stumps of sal and other associated species with coppicing capacity (e.g., Asan, Kend, Parasi) are cut to the ground with sharp cutting instrument to induce coppice regeneration. The

shoots that emerged as coppices are to be protected from fire and trampling by cattle in the first three years. Box trenches shall be installed for soil moisture and to aid the regeneration process. The operation known as Rehabilitation of Degraded Forest (RDF) is carried out in the months of February-March.

- Multiple Shoot Cutting (MSC)

At the third year of RDF operation, multiple shoots coming out of the stumps are thinned out by retaining three to four strong and healthy leading shoots per stump and removing the rest. Biomass obtained out of RDF operation is distributed to the JFMC members. This serves as carbon neutral source of energy in rural household.

b) Implementation Structure:

Same as Activity 1.1.2.3 Plantation in Degraded Forest Area.

c) Protection and Maintenance

The benefit will go to the JFMC members who are engaged in protection and maintenance of the plantation.

d) Implementation Schedule

Table 1.13 Implementation Schedule of Activity 1.2.2.2 Sal Coppicing in Dry Lateritic and Alluvial Landscape

Activity	Schedule
Site Preparation and coppicing	11/2024-2/2025 (Batch I) 11/2025-2/2026 (Batch II)
Multi shoot cutting (fourth year)	1-2/ 2029 (Batch I) 1-2/ 2030 (Batch II)

Source: JICA Survey Team

e) Target Area:

Table 1.14 Target Area of Sal Coppicing in Dry Lateritic and Alluvial Landscape

Plantation model (Working Circle)	Area proposed (ha)	Minimum area (ha)	District	Divisions
Sal coppicing (Sal coppice working circle)	1,000	25	Bankura	Bankura North Bankura South Panchet
			Paschim Medinipur	Medinipur Jhargram Rupnarayan Kharagpur
			Burdwan	Birbhum
			Purulia	Purulia Kangsabati (South)

Source: JICA Survey Team

(3) Activity 1.2.2.3 Plantation in Degraded Forest Areas

1) Sal Plantation in Dry Lateritic and Alluvial Landscape

a) General Description:

Sal plantation is a model which includes sal with sal associate indigenous species that restores wildlife habitat and to provide livelihood support to JFMC members from available NTFPs regenerated from tree species and other ground vegetations.

b) Objective:

To conserve, manage, and develop the floral and faunal bio-diversity of the natural forest, restore natural habitat for migratory elephants, and wildlife.

Plantation of sal (*Shorea robusta*) with other associates shall be established. JFMC members can be benefited from sal associate species.

c) Soil and Climate:

Red lateritic soil- deep reddish-yellow loamy to clayey soil together with Alluvium of Damodar, Kangsawati, Ajoy, and Rupnarayan rivers. Well-drained, low in organic matter and also in K and P. Hot dry summer, moderate winter, rainfall- 900 to 1,500 mm spread over 150 to 180 days.

d) Proposed Species:

Common sal associates are: *Terminalia Belerica*, *Anogeisus latifolia*, *Lagerstroemia perviflora*, *Terminalia chebula*, *Albizia lebbeck*, *Diospyras melanoxylon*, *Madhuca latifolia*, *Petrocarpus mursupium*, *Euchannia latifolia* etc., other associates are *Ougeinia oojeinensis*, *Dalbergia latifolia*, *Symplocos racemosa*, *Schleichera oleosa*, *Buchanania lanzan*, *Semecarpus anacardium*, *Soymida febrifuga*, etc.

e) Plantation Models:

Applicable plantation model is provided in Attachment 8.6.4.

f) Implementation Structure:

Same as Activity 1.1.2.3 Plantation in Degraded Forest Areas

g) Protection and Maintenance

Same as in Activity 1.1.2.3.

h) Implementation Schedule

Table 1.15 Implementation Schedule of Activity 1.2.2.3 Plantation in Degraded Forest Areas

Activity	Schedule
Creation (Survey, site clearance, making trenches, making pit, planting, making dug well and watering, weeding, mulching and application of fertilizer, making fire line, watch and ward provision)	1/2025-3/2026 (Batch I) 1/2026-3/2027 (Batch II) 1/2027-3/2028 (Batch III)
Maintenance (three years, weeding, mulching, making fire line, watch and ward provision)	4/2026-3/2029 (Batch I) 4/2027-3/2030 (Batch II) 4/2028-11/2030 (Batch III)

Source: JICA Survey Team

i) Locations and Target Area:

Plantation sites are mostly near JFMCs.

The benefit will go to JFMC members who are engaged in protection and maintenance of the plantation.

i) Total Extent: 400 ha

- ii) **Minimum Target Area: 2 ha per JFMC**
- iii) **Maximum Target 10 ha per JFMC**
- iv) **Area: 13 Forest Divisions covered by four districts**

Table 1.16 Target Area of Sal Plantation in Dry Lateritic and Alluvial Landscape

Plantation Model (Working Circle)	Area Proposed (ha)	Minimum Area (ha)	District	Divisions
Sal and associate plantation (Conservation working circle)	400	5	Bankura	Bankura North Bankura South Panchet
			Paschim Medinipur	Medinipur Jhargram Rupnarayan Kharagpur
			Burdwan	Birbhum
			Purulia	Purulia Kangsabati (South)

Source: JICA Survey Team

2) **Miscellaneous Plantation in South Bengal**

a) **General Description:**

Various indigenous species shall be planted for habitat restoration to provide livelihood support to the JFMC members from NTFPs available from regenerated tree species as well as from ground flora that will eventually come up.

b) **Silvicultural System to be Adopted:**

Miscellaneous native species with NTFP and medicinal values shall be planted on scrub or open forest after clear felling the site. One and half/two-year old seedling shall be used for NTFP and medicinal species. Intercropping of permitted species of NTFP/medicinal plants may be undertaken with JFMC members if permitted.

c) **Species Selection**

Native species with Karanj, Mahul, Haldu, Arjun, Bahera, Asan, Haritaki, Challa, Kalajam, Kusum, Ziziphus Species, etc., with each block of minimum 500 individuals.

d) **Plantation Model:**

Applicable plantation model is given in **Attachment 8.6.5**.

e) **Target Area:**

Table 1.17 Target Area of Miscellaneous Plantations in Dry Lateritic and Alluvial Landscape

Plantation Model (Working Circle)	Area Proposed (ha)	Minimum Area (ha)	District	Divisions
Miscellaneous plantation/ Development working circle	1,600	2	Bankura	Bankura North Bankura South Panchet
			Paschim Medinipur	Medinipur Jhargram Rupnarayan Kharagpur
			Birbhum	Birbhum
			Burdwan	Burdwan Durgapur
			Purulia	Purulia Kangsabati N Kangsabati S

Source: JICA Survey Team

f) Implementation Structure

Same as in Activity 1.1.2.3.

g) Protection and Maintenance

Same as in Activity 1.1.2.3.

h) Implementation Schedule

Table 1.18 Implementation Schedule of Activity 1.2.2.3 Plantation in Degraded Forest Areas (Sal Plantation)

Activity	Schedule
Preparatory Works and Plantation (Survey, site clearance, making trenches, making pit, planting, weeding, mulching and application of fertilizer, making fire line, watch and ward provision)	1/2025-3/2026 (Batch I) 1/2026-3/2027 (Batch II) 1/2027-3/2028 (Batch III)
Maintenance (three years, weeding, mulching, making fire line, watch and ward provision)	4/2026-3/2029 (Batch I) 4/2027-3/2030 (Batch II) 4/2028-11/2030 (Batch III)

Source: JICA Survey Team

(4) Activity 1.2.2.4 Tree Plantation Outside of Forest Areas (TPOFA)

a) General Description

Same as in Activity 1.1.2.4.

b) Beneficiary of Plantations

Same as in Activity 1.1.2.4.

c) Method of Implementation:

Same as in Activity 1.1.2.4.

d) Plantation Model:

Same as in Activity 1.1.2.4.

e) Transfer of Plantation

Same as in Activity 1.1.2.4.

f) Target Area:

Table 1.19 Target Area of Tree Plantation outside of Forest Area in Dry Lateritic and Alluvial Landscape

Plantation Model	Area Proposed (ha)	Minimum Area (ha)	Divisions
Tree plantation outside of forest area (Strip plantation)	250	5	Purulia Extension

Source: JICA Survey Team

(5) Activity 1.2.3 Ecosystem-based Disaster Risk Reduction (Eco DRR) Activities

(a) Activity 1.2.3.1 Preparation of Catchment Treatment (CAT) Plans and site identification (including procurement of vendor)

In order to reduce soil erosion and increase water retention capacity of the catchment, and increase water harvesting capacity of local communities (strengthen community resilience against drought in drought prone areas) through biological and engineering measures, catchment treatment plan shall be prepared. The preparation of CAT plan shall be outsourced to a specialised agency. In order to mainstream CAT plan in WBFD, an inception workshop with executive forest officers (PCCF, CCF, DFO, etc.) to identify/clarify the objective, output, and methodology shall be organised by the selected agency. More treatment can be undertaken in the drought-prone areas of the state. Divisional catchment treatment plan shall be prepared with DFOs.

a) Objective:

- To facilitate the hydrological functioning of the catchment and to augment the quality of water of the river and its tributaries.
- Conservation of soil cover and to arrest soil erosion, floods, and siltation of the river along with its tributaries and consequent reduction of siltation in the reservoir.
- Demarcation of the priority of watersheds for treatment based on soil erosion intensity in the catchment area.
- Rehabilitation of degraded forest areas through afforestation and facilitating natural regeneration of plants.
- Ecosystem conservation resulting from increased vegetal cover and water-retaining properties of soil.
- Support water harvesting for enhancement of livelihood of local communities

b) Method of CAT Preparation:

Table 1.20 Analysis and Methods Adopted for Preparation of CAT

Analysis	Data Source/Criteria/Others
Drainage analysis for sub watersheds	Watershed Atlas of India (AIS and LUS)
Soil class and soil depth type analysis	National Bureau of Soil Survey and land use planning (NBSS)

Analysis	Data Source/Criteria/Others
Land use/ land cover map	Forest types (dense, open and scrub forests), cultivation, residential areas, river and water bodies: 1:25,000 scale based on CATROSAT images
Vegetation map	Vegetation types required for different forest measures (afforestation, ANR, Coppicing, etc.): 1:25,000 scale based on LISS IV images with using Sentinel for seasonal data. See Attachment 8.6.6.
Slope class delineation	Gently slope (0-5%), Moderately slope (5-8%), Strongly slope (8-15%), Moderately steep (15-30%), Steep (30-50%), Very steep (>50%) are classified.
Geomorphology assessment	Geology map, geological survey of India
Social profile	SC/ST ratio, population density, etc., to characterise the micro watershed
Erosion intensity analysis	Erosion intensity/ water harvest potential level shall be analysed based on slope, forest/vegetation, soil class and size and location of micro watershed with comparison with the watershed.
Ranking of micro watershed	High potential micro watersheds are ranked based on erosion intensity
Treatable area analysis (Identification of Intervention Sites)	Identification of potential location of SMC measures (earthen check dam and others) and area of forest measures (afforestation, ANR and others) in its catchments in the high ranked micro watersheds Assessment of SMC works based on field visits and communication with local communities Check dams are selected for soil conservation and water harvest purposes
Catchment treatment map for selected micro watershed	SMC measures (earthen check dam and others) and area of forest measures (afforestation, ANR and others) in selected micro watersheds shall be prepared. 1:10,000 scale
Divisional plan preparation	Based on the result of SMC and forest works, divisional plan shall be prepared with Wbfd

Source: JICA Survey Team

c) Output of the Activity:

- Identification of biological (afforestation, ANR) and engineering measures (construction of earthen check dam, staggered trench, gully control structure, earthen check dam, earthen bunding, etc.) to reduce soil erosion and increase water retention/harvest capacity of the catchments will be specified in CAT plan.
- Divisional Catchment Treatment Plan (five-year plan of each division) will be developed.

d) Target Area:

Forest area of 488,111 ha in the following 13 divisions.

Bankura North, Bankura South, Panchet, Jhargram, Medinipur, Rupnarayan, Kharagpur, Purulia, Kangsabati (North), Kangsabati (South), Durgapur, Burdwan, Birbhum

(Total geographical area: 3,407,800 ha).

e) Implementation Structure

- PMU will outsource the activity to an external agency to prepare the CAT Plan.
- Taking into consideration of the planning process of CAT plan, it would be effective to procure one vendor to complete the entire process. Further, from the contract management point of view, managing one contract will reduce the time and effort of PMU on procurement and quality control. Thus, in principle, one vendor with adequate technical capacity shall be procured through local competitive bidding. However, the contract shall specify means and measures that would enable PMU to effectively control the quality and progress of the vendor. PMC will provide support in drafting TOR and contract monitoring.

f) Implementation Schedule

- To allow timely implementation of the subsequent activities of Batch 1, RFP will be floated by December 2023 and CAT plan and completed before December 2024.

Table 1.21 Implementation Schedule for Activity 1.2.3.1 Preparation of GIS based Catchment Treatment (CAT) Plans

Activity	Schedule
Preparation of RFP and procurement	Every December Batch wise
Preparation of Divisional plan	Batch I: Durgapur, Burdwan, Birbhum (3 divisions) 12/2024 Batch II: Bankura North, Bankura South, Pahchet, Jhargram, Medinipur, Rupnarayan, Kharagpur (7 divisions) 12/2025 Batch III: Purulia, Kangsabati (North), Kangsabati (South) (3 divisions) 12/2026

Source: JICA Survey Team

(b) Activity 1.2.3.2 Soil and Moisture Conservation Measures

Soil type of most of the forest areas in Southwest Bengal are highly vulnerable to different degrees of soil erosion. Such erosion is common to areas under red lateritic soil and gneissic gravelly soil with low to medium soil depth, and poor capacity of water retention. This unstable character of the soil, coupled with undulating terrain, often leads to severe run off and intense soil erosion. Therefore, it is imperative that afforestation activities be effectively safeguarded with suitable soil conservation measures.

In this project, based on CAT plan, soil and moisture conservation measures will be undertaken. SMC work will include earthen check dam construction combined with brushwood check dams and staggered contour trenches on the upper parts of check dams. On the lower parts, earthen bunding will be taken up.

The catchment area treatment tries to reduce the velocity of runoff water through a series of interventions. Interventions are made at different points in the catchment in a location-specific manner utilising locally available materials and the vast knowledge of the local people regarding water flows and resource availability. Interventions are generally planned according to the ridge-to-valley principle.

There are five types of soil and moisture conservation activities, namely, staggered contour trenches, hand packed walls, brushwood check dam, earthen check dam, earthen bund shall be undertaken based on CAT plan. The details of each work are provided in **Attachment 8.6.7**.

a) Implementation Structure

- PMU will plan the activity with DMU and DMU will directly undertake the construction work.

b) Implementation Schedule

Table 1.22 Implementation Schedule for Activity 1.2.3.2 Soil and Moisture Conservation Measures

Activity	Schedule
Preparation	Batch I 10-12/2024 Batch II 10-12/2025 Batch III 10-12/2026
Construction of Check dam	Batch I 12/2024-3/2025 Batch II 12/2025-3/2026 Batch III 12/2026-3/2027

Source: JICA Survey Team

(6) Activity 1.2.4 Green Laboratory Initiatives

In Dry Lateritic & Alluvial landscape, drought has been a persistent issue. In this dry zone, soil and water conservation technology could be a potential area of research with Japanese academic and research institutions and counterpart institutions in India. This collaborative research concept note can be developed by PMU with technical inputs by PMC during the initial stage of the project. PMC will facilitate in identifying the partner institutions within India and Japan. The budget for this activity can be generated by adjusting the overall project budget.

Jointly with Institute of Global Environmental Strategy (IGES), International Water Management Institute (IWMI) and other research and academic institutes in Japan and India may conduct research activities on the following topics.

- Development of indicators to assess climate vulnerability particularly for Dry Lateritic and Alluvial Landscape
- Development of landscape-based planning methods for Dry Lateritic and Alluvial Landscape
- Development of indicators for climate change vulnerability indicators for Dry Lateritic and Alluvial Landscape and strategy for building community resilience

(a) Activity 1.2.4.1 Nature Study in Forest Areas by Students

Activity 1.2.4.1 will be implemented by following the same implementation method depicted under Activity 1.1.4.1. The programme will focus on ecosystem based disaster reduction and prevention, climate change and resilience.

1.5 Sub-Component 1.3 Deltaic Landscape

(1) Activity 1.3.1 Community Resilience Measures in Sundarbans

In order to reduce the risk of high-tide flooding by increasing water embankment capacities, bamboo-based coastal defence structure shall be introduced with augmentation of vegetation cover including dibbling of mangrove on a pilot basis. The budget for this pilot activity has been estimated at INR 4 million for the pilot phase and INR 5 million for the rolling out of the model in villages.

(b) Activity 1.3.1.1 Preparatory Works including Site Selection

Coastal areas of buffer zone of STR and other WLS in South 24 Parganas shall be selected as project sites (nine villages). The status of the existing mangrove and flood damage of coastal areas shall be studied by satellite images and field visits.

The potential sites for treatment shall be selected based on the following criteria.

- Villages which have serious damages by frequent cyclone attacks.
- Earthen embankments are constructed to protect the residential areas. The mangrove is damaged but still has the potential to recover with artificial bamboo-based defence structure.
- RCC embankment is not constructed.
- Villagers are willing to collaborate with the project (instalment, monitoring, and evaluation) and provide collective efforts as JFMCs for augmentation of vegetation cover including dibbling of mangrove and install defence structures (e.g., removal of boat access to the restoration areas based on the agreement of villagers)

1.5.4.1.1 Activity 1.3.1.2 Preparation of Designs of Mangrove Restoration with Traditional Defence Measures and Activity 1.3.1.3 Implementation of Pilot Activities

For restorable mangrove forest, several pilot sites shall be set up with various conditions (status of mangrove, location in the island and wave conditions). For the pilot sites, model of defence structures with augmentation of vegetation cover including dibbling of mangrove shall be designed and established.

a) Implementation Method:

Village-level planning (July – Sept 2024/25/26)

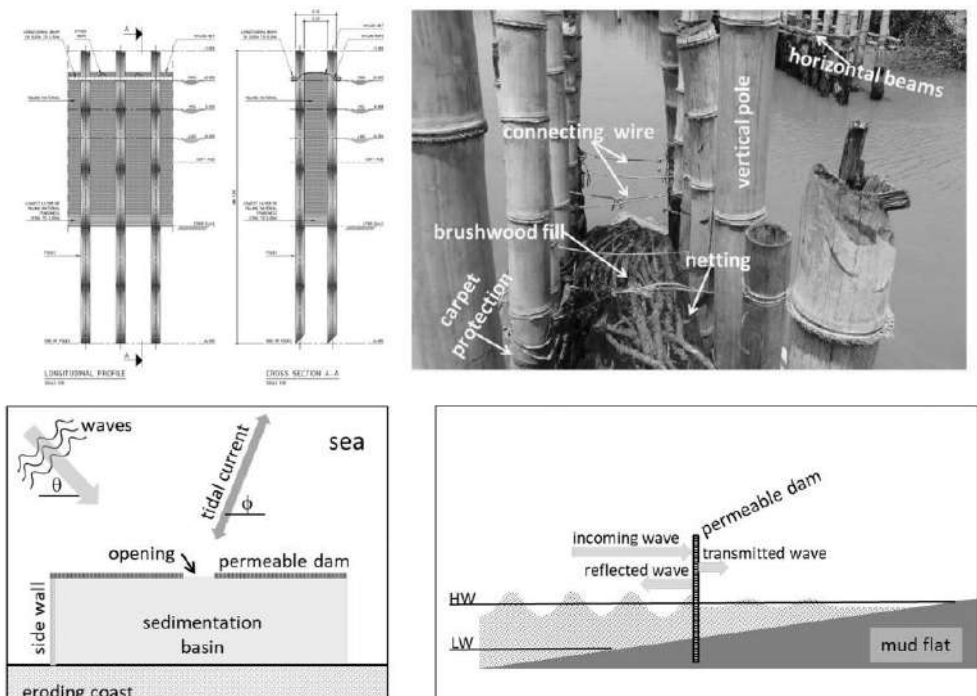
- Along with micro planning in Component 3, village-level mangrove restoration shall be planned in selected villages.
- Villagers are well-informed that in order to restore mangroves, the plantation needs to be protected.

Embankment with augmentation of vegetation cover (Oct. – Dec. 2024/25/26)

- After doing earthwork on Embankment, vetiver will be planted on embankment on jute geotextile (JGT) with vermicompost.
- Mangrove seeds and propagules shall be collected from the forest area including wilding. Mangrove shall be planted (dibbling seeds and planting of wilding / seedlings) with trenches for sowing seeds and pioneer grass. Suggested species: Salt tolerant species: *Avicenna* spp. *Excoecaria* spp.
- Making boundary fencing with wooden stick / bamboo sticks to prevent dragging fishing nets.
- Karanj (*Pongamia pinnata*) shall be planted on upper part of embankment of countryside.

Bamboo-based defence structure

- On the ocean side of the mangrove, bamboo-based defence structure shall be installed. Two types of such structure may be attempted: 1) permeable dam and 2) porcupine-shaped structure.



Source: Winterwerp et al., 2020

Figure 1.1 Concept of Permeable Dam



Source: Das, G.K. 2022'

Figure 41.2 Installed Porcupine Type Structure in Sundarbans

b) Selection of Sites and Implementation Schedule

In total, nine pilot JFMCs shall be selected. The implementation shall be in two batches: three JFMCs in each batch: first batch (2024-26), second batch (2025-27), and third batch (2026-28). Implementation shall be undertaken in three years (creation and two years of maintenance) in each pilot site. It is encouraged to organise collaborative research with international organisations. The Detailed Implementation Schedule is provided in **Attachment 8.6.8**.

(c) Activity 1.3.1.4 Evaluation of Pilot Activities

The installed defence structure and augmentation of vegetation cover shall be evaluated one year after the installation.

(d) Activity 1.3.1.5 Preparation of Plan to Install of Enhanced Models

Based on the result of pilot implementation of batch 1, activities of batches 2 and 3 shall be planned.

(e) Activity 1.3.1.6 Installation of Enhanced Restoration Models

At the end of the activities, final evaluation of the pilots is summarised as results. Based on the results, mangrove restoration with bamboo defence structure shall be installed in 24 Parganas South. Extension materials will be developed and promoted through the existing structure WBFD.

a) Implementation structure

- Based on the conditions mentioned in 1.3.1.1, DMU will select the target village and Site Specific Plan (SSP) shall be prepared by DMU for the village.
- Based on the SSP, village meeting, mangrove dibbling, installation of bamboo structure shall be conducted.
- Evaluation of pilot implementation shall be conducted by DMU with PMU and external experts for their feedbacks.
- The results of the pilot shall be shared with concerned parties through the presentation meeting and the result is expected to be used for other parts of the mangroves.

b) Selection of Sites and Implementation Schedule

In total, nine pilot JFMCs shall be selected. The implementation shall be in two batches: three JFMCs in each batch: first batch (2024-26), second batch (2025-27), and third batch (2026-28). Implementation shall be undertaken in three years (creation and two years of maintenance) in each pilot site. It is encouraged to organise collaborative research with international organisations. The Detailed Implementation Schedule is provided in **Attachment 8.6.8**.

(2) Activity 1.3.2 Green Laboratory Initiatives

(a) Activity 1.3.2.1 Nature Study in Forest Areas by Students

Activity 1.3.2.1 will be implemented by following the same implementation method depicted under Activity 1.1.4.1. The programme will focus on ecosystem based disaster reduction and prevention, climate change and resilience.

(b) Activity 1.3.2.2 Nature and Forests Programme Engaging Education/ Research Institution

Activity 1.3.2.2 shall be implemented by following the same implementation method depicted under Activity 1.1.4.2. The programme will focus on ecosystem based disaster reduction and prevention, climate change and resilience. The collaborative research topic may include below:

- Impacts on Climate Change on Mangrove Restoration with Mangrove Study Group of Tropical Biosphere Research Centre, University of the Ryukyus
- Action research on developing community incentive models for mangrove conservation in Sundarbans and its implication on the mangrove ecosystem conservation with IGES
- Developing indicators for climate change vulnerability for Sundarbans and strategies for building community resilience with IGES
- Standardisation of hazard mapping methods and monitoring system for Sundarbans

In this activity, India-Japan academic consortium to be established as collaboration. If the effect of the researched method is confirmed, that method to be reflected in the activities and the policy on climate change countermeasures in the state and other projects, and expanded to other states.

2. Component 2: Biodiversity Conservation and Restoration

2.1 Component Objectives

The objectives of this component are protection, preservation, management, or restoration of biological diversity of the state through scientific and adaptive management of protected areas, conservation of rare and endangered species, and mitigation of human-wildlife conflict, which are under threats of climate change impacts.

2.2 Proposed Project Area

The divisions proposed for particular activities in Component 2 by WBFD and site selection criteria are as per **Attachment 2**.

2.3 Component Structure

The sub-components are organised by landscape in order to maximise the benefit of synergy with the other components.

Table 2.1 Structure of Component 2

Sub-component	Activities
2.1 Hills and North Bengal Landscape	<p>1.1.1 Human-wildlife conflict mitigation 2.1.1.1 Stress induced conflict risk reduction by wild animals 2.1.1.2 Support communities for HW mitigation. 2.1.1.3 Pilot (Eco sensitive Zone) plantation with non-palatable/repulsive species</p> <p>1.1.2 Species conservation programme 2.1.2.1 Species recovery programme for local RET (North)</p> <p>1.1.3 Studies on wild animals and their behaviour 2.1.3.1 Study on 5 spp. of Lesser Cats in North Bengal</p>
2.2 Dry Lateritic and Alluvial Landscape	<p>2.2.1 Biodiversity conservation through people's participation in protected area 2.2.1.1 Bethuadahari WLS 2.2.1.2 Ballypur WLS</p> <p>2.2.2 Conservation for Smaller Mammals 2.2.2.1 Habitat Improvement 2.2.2.2 Conservation awareness generation</p> <p>2.2.3 Human-wildlife conflict mitigation 2.2.3.1 Rescue Centre for elephants including study of their behaviour 2.2.3.2 Stress induce conflict risk reduction by wild animals 2.2.3.3 Tracking of elephant route through radio collaring 2.2.3.4 Enhancement of tranquilizer equipment for wild animals to be kept in Airavat vans 2.2.3.5 Installation of (Early Warning System (EWS) for wild elephants 2.2.3.6 Development of software application for compensation for depredation by wild animals 2.2.3.7 Installation of Elephant Proof Trench (EPT) in South-West Bengal</p> <p>2.2.4 Species conservation programme 2.2.4.1 Dolphin conservation programme</p>

	<p>2.2.4.2 Breeding and releasing of Indian Pangolin</p> <p>2.2.4.3 Breeding and releasing of Fishing Cat</p> <p>2.2.4.4 Breeding and releasing of Indian Vulture</p> <p>2.2.4.5 Species recovery programme for local RET (South)</p>
2.3 Deltaic Landscape	<p>2.3.1 Biodiversity conservation through people’s participation in protected area</p> <p>2.3.1.1 Chintamani Kar Bird Sanctuary</p> <p>2.3.1.2 Bibhutibhushan WLS</p> <p>2.3.2 Human-wildlife conflict mitigation</p> <p>2.3.2.1 Stress induced conflict risk reduction by wild animals</p> <p>2.3.2.2 Veterinary facility in Sundarbans</p> <p>2.3.3 Studies on wild animals and their behaviour</p> <p>2.3.3.1 Assessment of aquatic biodiversity in Sundarbans and territorial waters</p> <p>2.3.3.2 Studies suggested by Central Asian Flyway</p>

Source: JICA Survey Team

2.4 Sub-component 2.1: Hills and North Bengal Landscape

(1) Activity 2.1.1 Human-Wildlife Conflict Mitigation

Table 2.2 Outline of Activities of 2.1.1 Human-Wildlife Conflict Mitigation in Hills and North Bengal Landscape

Objective	To control the straying of wild animals from their original habitats and mitigate Human-Wildlife Conflict (HWC) in North Bengal landscape.
Rationale	In order to reduce human casualties and crop damage by HWC, and also reduce revenge killing of wildlife, various mitigation measures need to be introduced based on knowledge and experience accumulated in West Bengal as well as other states with similar problem. This activity introduces different measures based on the needs and necessity for human-wildlife conflict mitigation in the north Bengal landscape.
Target Area (Landscape, Division)	<p>2.1.1.1 Stress induced conflict risk reduction by wild animals Jalpaiguri, Baikunthapur, Kurseong, Cooch Behar, Darjeeling Darjeeling WL, Gorumara WL, Jaldapara WL, BTR (East), BTR (West)</p> <p>2.1.1.2 Support communities for HW mitigation Kurseong, Kalimpong, Darjeeling, Darjeeling WL</p> <p>2.1.1.3 Pilot (Eco sensitive Zone) plantation with non-palatable/repulsive species Gorumara WL, Jaldapara WL</p>
Implementation Structure	<p>2.1.1.1 Stress induced conflict risk reduction by wild animals To be implemented by DMUs/WLSs and FMUs</p> <p>2.1.1.2 Support communities for HW mitigation To be implemented by DMUs/WLSs and FMUs</p> <p>2.1.1.3 Pilot (Eco sensitive Zone) plantation with non-palatable/repulsive species To be implemented by either tendering or directly by beneficially farmers from JFMCs</p>
Methodology Applied	In order to reduce human casualties and crop damage from HWC, this activity will select critical and strategic locations, with each of the three sub-activities providing different mitigation measures. The whole exercise will involve JFMC members in all stages of operation therefore utilising their knowledge and experience.

Source: JICA Survey Team

(a) Activity 2.1.1.1 Stress-induced Conflict Risk Reduction by Wild Animals

Table 2.3 Description of Activity 2.1.1.1 Stress-induced Conflict Risk Reduction by Wild Animals in Hills and North Bengal Landscape

1) Description of Activities	Provision of solar - energised fencing targeting elephants/leopards/gaurs/rhinos at strategic locations based on the assessment of locations, intensity, wildlife corridors and so on.
2) Work Volume	Provision of solar-energised fence only. May or may not be in the target 60 JFMCs in target divisions. INR 500,000/km, total 40 km of length.
3) Implementation Schedule/ Timing	Year 1: Identification of strategic locations, target FMUs, JFMCs and formulation of plans Year 2 to 5: Implementation of solar fencing of 40 km Year 2 to 5: Implementation of maintenance works

Source: JICA Survey Team

(b) Activity 2.1.1.2 Support Communities for Human Wildlife Mitigation

Table 2.4 Description of Activity 2.1.1.2 Support Communities for Human Wildlife Mitigation in Hills and North Bengal Landscape

1) Description of Activities	Provision of torches, lights, and other mitigation measures to JFMCs. Under this activity, the mitigation of HWC by way of elephant/other animal driving specialised teams (consist of rapid response teams and villagers) will be strengthened. Awareness generation and publicity will be taken up. Identification of rapid response team in villages in strategic locations. Implement capacity building of villages to support rapid response team.
2) Work Volume	Provision of torches, lights, and other mitigation measures to at least 40 JFMCs (non-project JFMCs/villages will be supported based on the prior assessment of needs and situation).
3) Implementation Schedule/ Timing	Year 1: Identification of strategic locations, target FMUs, JFMCs and formulation of plans Year 1: Procurement of necessary equipment and materials Year 2 to 4: Distribution of equipment and materials Year 1 to 2: Creation of village level rapid response team Year 3 to 4: Implementation of capacity building of villages to support rapid response team (orientation and training)

Source: JICA Survey Team

(c) Activity 2.1.1.3 Pilot Eco Sensitive Zone (ESZ) Plantation with Non-palatable/Repulsive Species

Table 2.5 Description of Activity 2.1.1.3 Pilot (Eco Sensitive Zone/ ESZ) Plantation with Non-Palatable/ Repulsive Species

1) Description of Activities	This sub-activity aims at mitigating Human Elephant Conflict (HEC) by promoting cultivation of species as a deterrent for elephant straying into the villages as a pilot. Activities include implementation of pilot plantation with non-palatable/repulsive species in an Integrated Agro-forestry Model in the Eco Sensitive Zones (ESZ) of target WLSs/NPs using plants like chili and lemon tree.
2) Work Volume	Creation of 10 km * 20 m strip, total 20 ha. INR 300,000/ha cost total 6,000,000. Target WLSs/NPs will be selected and plan to be made.
3) Implementation	Year 1: Identification of strategic locations, target FMUs, JFMCs and

Schedule/ Timing	<p>formulation of plans</p> <p>Year 1 to 3: Creation of pilot planting</p> <p>Year 2 to 6: Implementation of maintenance works</p> <p>The implementation and maintenance will be done by FMU/DMU.</p>
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Source: JICA Survey Team

(2) **Outline of Activity 2.1.2 Species Conservation Programme**

Table 2.6 Description of Activity 2.1.2 Species Conservation Programme in Hills and North Bengal Landscape

1) Objective	To protect important, rare, endangered, and threatened species who are at the same time considered as umbrella or flagship species and provide protections for other species from localised and landscape-scale threats.
2) Rationale	<p>There is a strong international mandate for species recovery programmes. India having signed and ratified the convention is trying its level best to achieve the targets. This sub-activity is a step towards implementation and achievement of international targets. Target RET species are part of the Schedule 1 of the Wildlife Act.</p> <p>2.1.2.1 Species recovery programme for local RET (North)</p> <p>The Global Strategy for Plant Conservation (GSPC) adopted by the CBD includes two key strategies for species level conservation of plants.</p> <p>(1) Target 7: At least 75% of known threatened plant species are conserved in situ.</p> <p>(2) Target 8: At least 75% of threatened plant species are conserved ex situ preferably in the country of origin; and at least 20% available for recovery and restoration programmes.</p> <p>The Species Recovery Plan may draw inputs from similar programmes successfully carried out in other countries such as CNC Flora of Brazil, PSESP of China or TS strategy of Australia.</p>
3) Target Area (Landscape, Division)	Jalpaiguri, Baikunthapur, Kurseong, Darjeeling, Darjeeling WL, Gorumara WL, Jaldapara WL, BTR (East), BTR (West), Cooch Behar
4) Implementation Structure	To be managed by PMU. Fund sent to DMU and FMU. Target Division or WL will be identified.
5) Methodology Applied	<p>2.1.2.1 Species recovery programme for local RET</p> <p>Two interventions, one in-situ and one ex-situ, constitute core of all plans and may be started early in the project period without waiting for the recommendations of Species Recovery Plans.</p> <p>(1) Protecting natural habitats for in-situ conservation.</p> <p>a. Such areas to be secured by fencing. Contiguous habitats may be secured together. Areas need not be too large in extent.</p> <p>b. Declaration of these protected areas as Conservation Reserve/ Biodiversity Heritage sites.</p> <p>(2) Ex-situ conservation by incorporating these RET species in plantation programme.</p> <p>a. A fundamental strategy in protection of threatened species is to adopt a policy of spreading the risk by attempting to foster the growth of two or more distinct populations. Separate populations are unlikely to be simultaneously affected by catastrophe.</p> <p>b. Block plantation raised under this programme, on maturity, will be used as seed collection area.</p>

Source: JICA Survey Team

(a) **Activity 2.1.2.1 Species Recovery Programme for Local RET(North)**

Table 2.7 Description of Activity 2.1.2.1 Species Recovery Programme for Local RET (North) in Hills and North Bengal Landscape

<p>1) Description of Activities</p>	<p>(1) Identify important RET plant species to make a long list, conduct rapid survey for these species By conducting literature review, interview of key informants and workshops in district level with various stakeholders, at least 20 RET species in the North and ten RET species in the South to be selected. For the 30 selected species, conduct rapid survey including field census to briefly confirm geographic distribution across the landscape, status of the species and the habitats including survey of forest areas for identification of localities (with GPS coordinates) where these species occur naturally.</p> <p>(2) Identifying factors that underlie a decline and determining which of these factors can be significantly influenced through management Analyse the structure of threat in both natural and socio-economic aspects to identify factors that underly a decline and determining which of these factors can be significantly influenced through management. Identifying ultimate and proximate causes of species decline referring to the IUCN Threat Classification Scheme of Version 3.2. Determining which of these factors can be significantly influenced through management.</p> <p>(3) Selection of RET species for species recovery programme At least 10 species to be selected to develop individual Species Recovery Plan. For the selection of species, clear criteria should be set up considering at least following three aspects.</p> <p>a. Importance: rare, unique, endangered, fragile, sensitive, and how much important for ecological integrity.</p> <p>b. Urgency: seriousness, rapidness, scale, and future trend of the threat.</p> <p>c. Effectiveness: if those could be protected within the current institutional mandate and implementation structure of the Wbfd effectively, the presence of conservation concern among people.</p> <p>(4) Preparing and implementing the Species Recovery Plans and establishing protection plots All of the above information will lead to the preparation of the Species Recovery Plan for each of the short-listed identified species. The process may be done in-house or may be outsourced depending on the available technical manpower in the forest directorate.</p>
<p>2) Work Volume</p>	<p>For selected ten spp. All in in suitable habitats (to be identified).</p> <p>a. Protection: 5 ha/ RET spp. = 50 ha.</p> <p>b. Plot: 2 plot/RET spp. = 20 plots</p>
<p>3) Implementation Schedule/ Timing</p>	<p>Year 1: Selection of RET species for species recovery programme Year 2: Establishment of protection plots Year 2 to 6: Implementation of Species Recovery Plan</p>

Source: JICA Survey Team

(3) Activity 2.1.3 Studies on Wild Animals and their Behaviour

Table 2.8 Outline of Activity 2.1.3 Studies on Wild Animals and their Behaviour

<p>1) Objective</p>	<p>To assess abundance of five lesser wild cats in North Bengal and to identify spatial distribution of them.</p>
<p>2) Rationale</p>	<p>Lesser wild cat populations are widely threatened with habitat loss, human-wildlife conflict, and wildlife trade throughout their extant range in the world. For the most part, information on small cats in India has been in a form of natural history notes on distribution and habits, ad-hoc records on sightings and behaviour, or short studies on diet and habitat use.</p>
<p>3) Target Area</p>	<p>BTR (East), BTR (West), Jaldapara Wildlife-III Division.</p>

(Landscape, Division)	
4) Implementation Structure	To be managed by PMU, sub-contracted to capable institution such as the Zoological Survey of India (ZSI) and the Nature Environment Wildlife Society (NEWS).
5) Methodology Applied	The investigation by capable sub-contractor would be through a three-fold survey method: 1) Questionnaire survey, 2) Sign survey, and 3) Camera trapping. The photos captured would then be analysed. Relative abundance index (RAI) would then be calculated to study the abundance. This is required for developing conservation management and firm scientific planning to ensure long-term survival of these four existing sympatric species.

Source: JICA Survey Team

(a) Activity 2.1.3.1 Study on 5 spp. of Lesser Cats in North Bengal

Table 2.9 Description of Activity 2.1.3.1 Study on 5 spp. of Lesser Cats in North Bengal

1) Description of Activities	A study would be conceptualised to assess population trend of lesser wild cats in the northern part of West Bengal. The study would be on (i) Leopard cat (<i>Prionailurus bengalensis</i>), (ii) Fishing cat (<i>Prionailurus viverrinus</i>), (iii) Jungle cat (<i>Felis chaus</i>) and (iv) Marbled cat (<i>Pardofelis marmorata</i>) (v) Asian Golden Cat (<i>Catopuma temminckii</i>).
2) Work Volume	(1) Preliminary Survey (2.00) (2) Field work including training, transportation, engagement of persons and collection of data (48.00) (3) Analysis of data (6.00) (4) Preparation of Preliminary report and discussion (2.00) (5) Preparation of Final report (2.00) Total: INR 3,000,000s
3) Implementation Schedule/ Timing	Year 1: Procurement and contracting Year 1 to 3: Implementation of planned studies

Source: JICA Survey Team

2.5 Sub-component 2.2: Dry Lateritic and Alluvial Landscape

(1) Activity 2.2.1 Biodiversity Conservation through People's Participation in Protected Area

Table 2.10 Outline of Activity 2.2.1 Biodiversity Conservation through People's Participation in Protected Area

1) Objective	To conserve biodiversity of distinct genotypes of local species population from localised and landscape-level threats through intensive management in and outside of PA system with people's participation. To strengthen the stake of the neighbouring communities in conservation of the PAs.
2) Rationale	A considerable part of West Bengal's forest, covering more than 30% of area is under PA network. Presently, there are 15 wildlife sanctuaries and six national parks. While most of the PAs are large and houses one or more flagship spp., a few of them are located mostly in laterite alluvial part of West Bengal covering a small area and harbour local biodiversity. PAs of the latter category fails to attract federal funding but serve the useful purpose of conservation of distinct genotype of local populations as well as awareness generation for visitors. They also serve as habitat to various types of fauna wildlife. These PAs are located in places that have little forest or wildlife and are close to urban areas. Given their proximity to urban centres, they receive relatively high number of visitors, and serve as an opportunity

	<p>for conservation-related education of the civil society.</p> <p>For intensified management of selected PAs of the latter category, the project proposes taking up four selected PAs for critical activities and infrastructure development. Three of the four small PAs (except Chintamoni Kar Bird Sanctuary) also have the facility, the Nature Interpretation Centre, which is under construction. The three also have various amenities for visitors including lodging, trails, and sitting places that are in various states of utilisation.</p>
3) Target Area (Landscape, Division)	<p>2.2.1.1 Bethuadahari WLS Nadia-Murshidabad</p> <p>2.2.1.2. Ballavpur WLS Birbhum</p>
4) Implementation Structure	<p>To be implemented by DMU-FMU for habitat improvement, sanctuary management including tourism related activities within WLS.</p> <p>To be implemented by DMU-FMU-JFMC for support to SHG members/ entrepreneurs related to community development and livelihood enhancement through eco-tourism.</p>
5) Methodology Applied	<p>The activities in WLSs will focus on three main components: 1) improved protection; 2) infrastructure and facility development; and 3) improved ecotourism. Implementation of activities related to habitat improvement, infrastructure development, and visitor-experience will be based on Management Plan and APOs over a period of five years. Also, improvement/ strengthening of arrangements for community stake and participation-ecotourism, conservation education, creation of forum for community engagement in conservation are to be done.</p>

Source: JICA Survey Team

(a) Activity 2.2.1.1 Bethuadahari WLS

Table 2.11 Description of Activity 2.2.1.1 Bethuadahari WLS

1) Description of Activities	<p>Improvement of boundary fencing; repair of inspection shed; Fencing for medicinal and fodder plantation; Improved visitor experience, amenities, and awareness; Refurbishment of Nature Interpretation Centre; Repair of bird aviary; Feeding stall for deer; Rehabilitation of ponds; Repair of rescue and treatment shed; Establishment of medicinal and fruit species nursery; Cleaning of side drains; Mobilisation of community (JFMCs) and strengthening capacities for protection support and improved income from eco-tourism.</p>
2) Work Volume	<p>(1) Sanctuary Protection and Management:</p> <ul style="list-style-type: none"> • Improvement of boundary fencing: 250 metres • De-silting, net fencing of gharial pond: 1 pond • De-silting and beautification of second pond: 1 pond • Improvement and repair of inspection shed: 1 • Repair of aviary with agronet shed, iron net, etc.: 1 • Development and repair of deer feeding staff: 1 • Medicine and special feed for animals and birds: 1 • Fencing for medicinal plantation: 100 metres • Fencing for fodder plantation: 1 ha. • Establishment of medicinal and fruit spp.: 15,000 seedlings • Making new orchidarium: 1 • Cleaning of side drains: 6,000 metres. <p>(2) For improved visitor experience, and awareness:</p> <ul style="list-style-type: none"> • Development and digitisation for National Informatic Centre (NIC): 1

	<ul style="list-style-type: none"> • Solar power grid system for NIC: 1 • Painting of NIC (inside and outside): 1 • Computerised ticketing system: 1 • Drinking water stall: 4 • Map and guide of WLS: 1 • Garage for vehicle/ car for visitors: 1 • Repair of toilet for visitors: 1 • Improvement of visitor shed: 2 • Construction of display cum sitting arrangement with animal figurine/ motif: 4 • Signage for awareness: 4 <p>(3) For improved stake of local communities in WLS conservation:</p> <ul style="list-style-type: none"> • Strengthening arrangements and capacities for improved income from eco-tourism: 1 JFMC/ EDC.
3) Implementation Schedule/ Timing	<p>Year 1: Revision of Management Plan (if required); Mobilisation of existing EDC (JFMC); Signing of MoU for sharing of eco-tourism income; Developing plan for improved income from eco-tourism products with JFMCs/ SHGs (microplanning)</p> <p>Year 2 to 6: Implementation of sanctuary management and infrastructure development.</p> <p>(Community Development Activities (CDA), training of JFMC/ SHG members related to eco-tourism products (guide, handicrafts, etc.), revolving fund support, to be included in Component 3 in years 2 to 6.)</p>

Source: JICA Survey Team

(b) Activity 2.2.1.2 Ballavpur WLS

Table 2.12 Description of Activity 2.2.1.2 Ballavpur WLS

1) Description of Activities	<p>Construction of boundary wall with concertina fencing for improved protection; Repair of water tub for improved water facility; Repair of feeding shed; Repair and painting of ticket counter; Chain-link fencing; Development of nature trails; Installation of CC camera and accessories for better protection; Signage, awareness books, faunal chart; interactive display material for school children and general tourists for improved awareness; Fodder cultivation for habitat improvement; Repair of Feed Godown; Mobilisation of community (JFMCs) and strengthening capacities for improved income from eco-tourism.</p>
2) Work Volume	<ul style="list-style-type: none"> • Construction of boundary wall: 800 metres • Repair of water tub for improved water facility: 4 • Repair of feeding shed: 2 • Repair and painting of ticket-counter: 1 • Chain-link fencing: 400 metres • Development of nature trails: 200 metres • Installation of CC camera and accessories: 10 • Signage, awareness books, faunal chart: 1 • Interactive display material for school children and general tourists: 1 • Fodder cultivation: 4 ha. • Repair of Feed Godown: 1 • Strengthening arrangements and capacities for improved income from eco-tourism: 3 JFMCs
3) Implementation Schedule/ Timing	<p>Year 1: Revision of Management Plan (if required); Mobilisation of existing EDC (JFMC); Signing of MoU for sharing of eco-tourism income; Developing plan for improved income from eco-tourism products with</p>

	<p>JFMCs/ SHGs (microplanning) Year 2 to 6: Implementation of sanctuary management and infrastructure development. (Community Development Activities (CDA), training of JFMC/ SHG members related to eco-tourism products (guide, handicrafts, etc.), revolving fund support, to be included in Component 3 in years 2 to 6.)</p>
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Source: JICA Survey Team

(2) **Activity 2.2.2 Conservation for Smaller Mammals**

Table 2.13 Outline of Activity 2.2.2 Conservation for Smaller Mammals

1) Objective	To save critically endangered species/ecosystems and to ensure their protection outside the Protected Areas, across the South-West Bengal landscape
2) Rationale	<p>Significant populations of RET smaller mammals exist outside the Protected Areas moving for dispersal from their natural habitats or for seasonal migration. Based on research during Phase 1, species conservation strategies were prepared, including documentation of preferred habitats for four (out of five studied) species; Striped Hyena (<i>Hyaena hyaena</i>), Indian wolf (<i>Canis lupus palliceps</i>), Golden Jackal (<i>Canis aureus</i>), and Wild Boar (<i>Sus scrofa</i>). This activity will be implemented based on the achievement of Phase 1. 5 species will be identified for this activities.</p> <p>2.2.2.1 Habitat Improvement Water in Dry Lateritic and Alluvial Zone is an important aspect in determining habitat and one of the key reasons why wild animals come out from the forest into human habitation. Water body will be created for improvement of critical habitat.</p> <p>2.2.2.2 Conservation awareness generation A major challenge for protecting RET mammals is lack of awareness of communities that are close to the animals' territory. Therefore, in addition to applying physical measures, various methods will be used to raise awareness of surrounding the communities.</p>
3) Target Area (Landscape, Division)	<p>2.2.2.1 Habitat Improvement Purulia, Jhargram, Medinipur, Bankura (South), Bankura (North), Birbhum (Divisions where the habitat has been identified) or any other divisions where their habitat is identified</p> <p>2.2.2.2 Conservation awareness generation 2,000 JFMCs spread over four Divisions (Purulia, Bankura (South), Jhargram, Medinipur or other divisions based on identification of critical habitat)</p>
4) Implementation Structure	To be implemented by DMUs and FMUs.
5) Methodology Applied	<p>2.2.2.1 Habitat Improvement To apply technique for the development of water body to improve habitat of wildlife along with conservation awareness generation activities.</p> <p>2.2.2.2 Conservation awareness generation To apply combination of different technique for awareness generation such as i) discouraging traditional hunting, ii) participation of NGO, iii) awareness among masses.</p>

Source: JICA Survey Team

(a) **Activity 2.2.2.1 Habitat Improvement**

Table 2.14 Description of Activity 2.2.2.1 Habitat Improvement in Dry Lateritic and Alluvial Landscape

1) Description of Activities	Implement measures for habitat improvement include augmentation of existing waterbody or creation of waterbody.
2) Work Volume	<ul style="list-style-type: none"> • Top Dimension of Pond 27.5 m x 27.5 m • Bottom Dimension of Pond 17 m x 17 m • Depth 3 m • Side slopes 1.5: 1 • Capacity of pond =1,765765 m³ 25 number of such ponds in target divisions
3) Implementation Schedule/ Timing	Year 1: Finalise habitat improvement plan Year 2 to 5: Habitat improvement works

Source: JICA Survey Team

(b) Activity 2.2.2.2 Conservation Awareness Generation

Table 2.15 Description of Activity 2.2.2.2 Conservation Awareness Generation in Dry Lateritic and Alluvial Landscape

1) Description of Activities	<p>Conservation awareness generation through the following:</p> <p>i. Discouraging traditional hunting: The traditional hunting festivals carried out through various nomenclature and time causes substantial damage to the gene pool of these species. The indiscriminate killing of animals takes place and even the young ones of these species are not spared. Protection and awareness to counter such hunting is essential for sustenance of these species.</p> <p>ii. Participation of NGO: Collaboration with NGOs working in the field will be done to aid in protection and awareness generation.</p> <p>iii. Awareness among masses: Film show, poster, conservation related pamphlet development would be undertaken to raise awareness and simultaneously reduce false campaign.</p>
2) Work volume	<p>(1) Developing outreach and awareness materials. Film shows, posters, pamphlets</p> <p>(2) Community level meeting Covering 2,000 JFMCs in four divisions. Two meetings per JFMC</p>
3) Implementation Schedule/ Timing	Year 1 to 5: Developing outreach and awareness materials Year 1 to 5: Community level meeting, conservation education and awareness building

Source: JICA Survey Team

(3) Activity 2.2.3 Human-Wildlife Conflict Mitigation

Table 2.16 Outline of Activity 2.2.3 Human-Wildlife Conflict Mitigation in Dry Lateritic and Alluvial Landscape

1) Objective	To control the straying of wild animals from their original habitats and mitigate Human Wildlife Conflict (HWC) and to manage problematic elephants to limit loss of life caused by such elephants.
2) Rationale	Human Wildlife Conflict, especially the Human-Elephant Conflict (HEC) is a critical issue in south-west Bengal due to increase in elephant population (migratory as well as residential) and expansion of their home range and 'zone of influence'. Every year considerable number of humans are killed or injured due to elephant attacks. At the same time, elephants are also killed in retaliation due to such conflicts. This activity introduces different measures based on the needs and necessity for human-wildlife conflict mitigation in south-west Bengal landscape.

3) Target Area (Landscape, Division)	2.2.3.2 Stress induce conflict risk reduction by wild animals	Bankura (North), Bankura (South), Panchet, Medinipur, Jhargram, Rupnarayan, Kharagpur, Purulia, Kangsabati (North), Kangsabati (South), Burdwan, Durgapur, Birbhum
	2.2.3.3 Tracking of elephant route through radio collaring 2.2.3.4 Enhancement of tranquilizer equipment for wild animals to be kept in Airavat van 2.2.3.5 Installation of EWS (Early Warning System) for wild elephants	Medinipur, Rupnarayan, Kharagpur, Jhargram, Bankura (North), Bankura (South), Panchet, Purulia, Kangsabati (North), Kangsabati (South), Birbhum, Durgapur, Burdwan.
	2.2.3.6 Development of software application for compensation for depredation by wild animals	To be used in all Forest Divisions
	2.2.3.7 Installation of Elephant Proof Trench (EPT) in South-West Bengal	Medinipur, Rupnarayan, Kharagpur, Jhargram, Bankura (North), Bankura (South), Panchet, Purulia, Kangsabati (North), Kangsabati (South), Birbhum, Durgapur, Burdwan
4) Implementation Structure	2.2.3.1 Rescue Centre for elephants including study of their behaviour • To be implemented by WBZA. 2.2.3.2 Stress induce conflict risk reduction by wild animals • To be implemented by DMUs. 2.2.3.3 Tracking of elephant route through radio collaring 2.2.3.4 Enhancement of tranquilizer equipment for wild animals to be kept in Airavat van • To be procured by PCCF Wildlife and CWW. 2.2.3.5 Installation of EWS (Early Warning System) for wild elephants • To be implemented by DMUs. 2.2.3.6 Development of software application for compensation for depredation by wild animals • To be managed by PMU. 2.2.3.7 Installation of Elephant Proof Trench (EPT) in South-West Bengal • To be implemented by DMUs.	
5) Methodology Applied	2.2.3.1 Rescue Centre for elephants including study of their behaviour • An in-situ elephant holding ground has been proposed in southwest Bengal for rescue and rehabilitation of problematic elephants. 2.2.3.2 Stress induce conflict risk reduction by wild animals • It focuses on stray control measures which will include equipment like search lights, scaring materials etc. 2.2.3.3 Tracking of elephant route through radio collaring • Procure in accordance with established procurement methods and processes. 2.2.3.4 Enhancement of tranquilizer equipment for wild animals to be kept in Airavat van • Procure in accordance with established procurement methods and processes. 2.2.3.5 Installation of EWS (Early Warning System) for wild elephants	

	<ul style="list-style-type: none"> The Forest Department would install early-warning systems along key elephant corridors in Southwest Bengal to automatically notify nearby villages about the presence of elephants. <p>2.2.3.6 Development of software application for compensation for depredation by wild animals</p> <ul style="list-style-type: none"> The objective of this initiative is to facilitate compassionate payment in a time bound and hassle-free manner to citizens who are victim of wildlife depredation. Using the Web Portal and Mobile App, Citizens/applicant can fill-up application form on both Android App and Web. Applicant can view application by "search" in web portal giving auto generated unique token ID. After receiving such application, Forest Department surveyors will verify the claims within their jurisdiction within stipulated time. Message and mail as a token of acknowledgement will be automatically sent to applicant at his registered mobile number / email. <p>2.2.3.7 Installation of Elephant Proof Trench (EPT) in South-West Bengal</p> <ul style="list-style-type: none"> 1.5 metre deep trenches with 2 metres wide at the top and 1 metre wide at the bottom appear to be effective in long run for restricting movement of wild elephants across conflict zones.
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Source: JICA Survey Team

(a) **2.2.3.1 Rescue Centre for Elephants including Study of their Behaviour**

Table 2.17 Description of Activity 2.2.3.1 Rescue Centre for Elephants including Study of Their Behaviour in Dry Lateritic and Alluvial Landscape

1) Description of Activities	The problem becomes severe when lone tuskers get separated from the herd and their behaviour becomes unpredictable. An in-situ elephant holding ground will be created in southwest Bengal for rescue and rehabilitation of problematic elephants.
2) Work Volume	<p>(1) Getting required permission from concerned agencies, procurement of contractor</p> <p>(2) Construction of the enclosure: Approximately 1,800 ha of enclosures are made up of rail fencing of 15 km for temporary confinement of such problematic exceptions. All associated work including detailed planning of construction, hiring a biologist, developing protocol for behaviour monitoring, and monitoring and study on the elephants will be borne by the departmental budget.</p> <p>(3) Study on Animal Behaviour : A study on changes in the behaviour of captured elephant will be conducted. The results shall be compiled as a study report and submitted to PMU.</p>
3) Implementation Schedule/ Timing	<p>Year 1: A committee of wildlife wing headed by the CWLW will decide the precise intervention and location including design, location of target species. Getting required permissions from concerned agencies, procurement of contractor.</p> <p>Year 2 to 4: Construction of the enclosure</p>

Source: JICA Survey Team

(b) **2.2.3.2 Stress-induced Conflict Risk Reduction by Wild Animals**

Table 2.18 Description of Activity 2.2.3.2 Stress Induce Conflict Risk Reduction by Wild Animal in Dry Lateritic and Alluvial Landscape

1) Description of Activities	Capacity and infrastructure available for managing and responding to the situation of HWC will be augmented by provision of equipment and
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	mobility in strategic locations. Budget will be used to augment funds available from other sources.
2) Work Volume	No. of JFMCs: 415 Provision of torches, lights, and other mitigation measures. Cost per driving night to be provided. Budget will be used to augment funds available from other sources.
3) Implementation Schedule/ Timing	Year 1: Procurement of equipment and materials Year 2 to 6: Implementation of augmentation of mitigation activities

Source: JICA Survey Team

(c) 2.2.3.3 Tracking of elephant route through radio collaring

Table 2.19 Description of Activity 2.2.3.3 Tracking of Elephant Route through Radio Collaring

1) Description of Activities	Once the elephants in Rescue Centre cool down, then they would be released in wild habitats. These animals would be radio- collared before release, so that their movements may be tracked. Recently Government of India has accorded permission for capturing 10 wild elephants to Government of West Bengal.
2) Work volume	10 radio collars for permitted 10 number of elephants Unit cost INR 226,000/-, a total of INR 2,260,000/-
3) Implementation schedule/ timing	Year 4: Procurement of equipment and materials Year 5 to 6: Installation of collars

Source: JICA Survey Team

(d) 2.2.3.4 Enhancement of tranquilizer equipment for wild animals to be kept in Airavat vans

Table 2.20 Enhancement of Tranquiliser Equipment for Wild Animals to be kept in Airavat Vans

1) Description of Activities	Since 2016, a special vehicle called “Airavat” has been deployed in the forests of Bankura, Jalpaiguri and Alipurduar in West Bengal for rapid combat. The vehicles have all modern amenities including tranquilizing guns, net, generator and others. Recently Government of India has accorded permission for capturing 10 wild elephants to Government of West Bengal and thus proposal for purchase of tranquilizing equipment has been given. Moreover, as earlier stated that Elephant Rescue Centre is being made at South Bengal, where trouble making elephants would be kept after capturing. For capturing them, tranquilizer equipment would be required.
2) Work volume	Purchase of equipment. Indicative list of items include: <ul style="list-style-type: none"> • Dist-Inject Syringe Charge • Cartridge for guns • Aluminum metal syringe barrel • Feathered stabiliser for metal barrels • Rubber piston for metal barrels • Practice needles • Yohombine • Ketamine HCL injection • Xylazine HCL injection A total cost of INR 2,900,000
3) Implementation	Year 1 to 2: Procurement of equipment and materials

schedule/ timing	Year 2: Distribution at Airavat vans
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Source: JICA Survey Team

(e) **2.2.3.5 Installation of Early Warning System (EWS) for Wild Elephants**

Table 2.21 Installation of Early Warning System (EWS) for Wild Elephants

1) Description of Activities	Install Early Warning Systems (EWSs) along key elephant corridors in Southwest Bengal to automatically notify nearby villages about the presence of elephants. EWSs, which employ infrared sensors, will light up and raise an alarm that can be heard in villages located near them. When this alarm is heard, people will keep in mind that there are elephants nearby and stay inside their homes. The infrared sensors are triggered when an animal or object passes in front of it. To prevent false-alarms caused by other wildlife passing between the sensors, only animals that are above eight-feet in height will cause the alarm to trigger.
2) Work volume	200 units of EWSs Unit cost INR 48,000, a total of INR 9,600,000
3) Implementation schedule/ timing	Year 1: Procurement of HWSs equipment and materials Year 2 to 3: Installation of EWSs

Source: JICA Survey Team

(f) **2.2.3.6 Development of software application for compensation for depredation by wild animals**

1) Description of Activities	The portal and mobile application is to be used for claiming Compassionate Payment towards human death and injury, cattle death, crop damage or house damage by Wild Animals. This would help in easy disposal of compensation applications of public.
2) Work volume	Lumpsum INR. 5,000,000
3) Implementation schedule/ timing	Year 1: Development of software application Year 2 to 3: Installation of software application

Source: JICA Survey Team

(g) **2.2.3.7 Installation of Elephant Proof Trench (EPT) in South-West Bengal**

1) Description of Activities	Elephant Proof Trenches (EPT) are used for restricting movement of Wild elephants across litigation zones.
2) Work volume	Length of EPT: 95.36 Km Unit Cost INR.278,100/ Km, a total of INR 26,519,616/-
3) Implementation schedule/ timing	Year 1: Planning, target area and communities Year 2 to 3: Installation of EPT

Source: JICA Survey Team

(4) **Activity 2.2.4 Species Conservation Programme**

Table 2.22 Outline of Activity 2.2.4 Species Conservation Programme in Dry Lateritic and Alluvial Landscape

1) Objective	To protect important rare, endangered, and threatened species who are at the same time umbrella or flagship species and provide protections for other species from localised and landscape-scale threats.
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<p>2) Rationale</p>	<p>There is a strong international mandate for species recovery programmes. India, having signed and ratified the convention, is trying its level best to achieve the targets. This sub-activity is a step towards implementation and achievement of international targets.</p> <p>2.2.4.5 Species recovery programme for local RET (South) The Global Strategy for Plant Conservation (GSPC) adopted by CBD includes two key strategies for species level conservation of plants.</p> <p>(1) Target 7: At least 75% of known threatened plant species are conserved in situ.</p> <p>(2) Target 8: At least 75% of threatened plant species are conserved ex situ preferably in the country of origin; and at least 20% available for recovery and restoration programmes.</p> <p>The species recovery plan may draw inputs from similar programmes successfully carried out in other countries such as CNC Flora of Brazil, PSESP of China, or TS strategy of Australia.</p>
<p>3) Target Area (Landscape, Division)</p>	<p>2.2.4.1 Dolphin conservation programme Burdwan, Nadia-Murshidabad</p> <p>2.2.4.2 Breeding and releasing of Indian pangolin Alipore Zoological Park, Purulia and Jhargram, and other divisions to be identified if necessary.</p> <p>2.2.4.3 Breeding and releasing of fishing cat Alipore Zoological Park, South 24 Parganas, and other divisions to be identified if necessary.</p> <p>2.2.4.4 Breeding and releasing of Indian vulture Alipore Zoological Park, South 24 Parganas, and other divisions to be identified if necessary.</p> <p>2.2.4.5 Species recovery programme for local RET (South) Target Division will be identified. Bankura (North), Jhargram, Burdwan.</p>
<p>1) Implementation Structure</p>	<p>2.2.4.1 Dolphin conservation programme Implemented by the DMUs - FMUs.</p> <p>2.2.4.2 Breeding and releasing of Indian pangolin Implemented by Alipore Zoological Park under guidance of WBZA, to be soft released in Purulia and Jhargram.</p> <p>2.2.4.3 Breeding and releasing of fishing cat Implemented by Alipore Zoological Park under guidance of WBZA, to be soft released in Jharkhali and South 24 Parganas.</p> <p>2.2.4.4 Breeding and releasing of Indian vulture Implemented by Alipore Zoological Park under guidance of WBZA, to be soft released in South 24 Parganas.</p> <p>2.2.4.5 Species recovery programme for local RET (South) To be managed by the PMU. Fund sent to the DMU and FMU.</p>
<p>2) Methodology Applied</p>	<p>Biodiversity conservation can be achieved by combining different approaches in two distinct environments: In-Situ and Ex-Situ. Gangetic dolphin is to be protected In-Situ, while Indian pangolin, fishing cat, and Indian vulture are to be protected both in-situ with their distribution zone in West Bengal landscape and ex-situ in Alipore Zoological Park or other appropriate zoos with necessary experience and facilities.</p> <p>2.2.4.1 Dolphin conservation programme Strengthening of infrastructure for proper monitoring, rescue, and rehabilitation; Capacity building, awareness generation and education of stakeholders.</p> <p>2.2.4.2 Breeding and releasing of Indian pangolin</p> <p>2.2.4.3 Breeding and releasing of fishing cat</p> <p>2.2.4.4 Breeding and releasing of Indian vulture</p> <p>Development and implementation of protocol for conservation breeding and</p>

	<p>soft release.</p> <p>2.2.4.5 Species recovery programme for local RET (South)</p> <p>Two interventions, one in-situ and one ex-situ, constitute core of all plans and may be started early in the project period without waiting for the recommendations of species recovery plans.</p> <p>(1) Protecting natural habitats for in-situ conservation.</p> <p>a. Such areas may be secured by fencing. Contiguous habitats may be secured together. Areas need not be large in extent.</p> <p>b. Declaration of these protected areas as Conservation Reserve/ Biodiversity Heritage sites.</p> <p>(2) Ex-Situ conservation by incorporating these RET species in plantation programme.</p> <p>a. A fundamental strategy in protection of threatened species is to adopt a policy of spreading the risk by attempting to foster the growth of two or more distinct populations. Separate populations are unlikely to be simultaneously affected by catastrophe.</p> <p>b. Block plantation raised under this programme, on maturity, will be used as seed collection area.</p>
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Source: JICA Survey Team

(a) **2.2.4.1 Dolphin Conservation Programme**

Table 2.23 Description of Activity 2.2.4.1 Dolphin Conservation Programme in Dry Lateritic and Alluvial Landscape

1) Description of Activities	Annual population survey and threat assessment; assessment of prey base in critical areas; development of standard monitoring protocol (Guidelines/ Manual); capacity building of staff; collaboration with resource institutions, NGOs, and local cooperatives (fishermen); awareness generation by involving specialised NGOs (WWF, NEWS etc.)
2) Work Volume	<p>(1) Awareness raising Twenty events per year in two divisions</p> <p>(2) Boat rent Seventy days per year in two divisions</p> <p>(3) Assessment of prey base in critical area</p> <p>(4) Preparation of standard monitoring protocol(Guidelines/ Manual)</p> <p>(5) Capacity building and training One training/year for three years for two targeted divisions</p> <p>(6) Rescue and recovering of dolphins and other aquatic animals</p>
3) Implementation Schedule/ Timing	<p>Year 1: Planning, target area/population selection.</p> <p>Year 2 to 6: Implementation of Conservation Action Plan</p>

Source: JICA Survey Team

(b) **Activity 2.2.4.2 Breeding and Rreleasing of Indian Pangolin**

Table 2.24 Description of Activity 2.2.4.2 Breeding and Releasing of Indian Pangolin in Dry Lateritic and Alluvial Landscape

1) Description of Activities	Development of protocols for conservation breeding, development of suitable infrastructure for conservation breeding, implementation of breeding and soft releasing of Indian pangolin.
2) Work Volume	<p>(1) Hiring of Research Assistant - 1</p> <p>(2) Hiring of Field Assistant - 3</p> <p>(3) Shipment cost</p> <p>(4) Camera</p>

	<ul style="list-style-type: none"> (5) Awareness programs at fringe villages (6) Printing conservation and publicity materials (7) Travel and field work (8) Lab charges (9) Building Ex situ conservation facility at Junglemahal Zoological Park, Jhargram (10) Building Ex situ conservation facility at Surulia Mini Zoo, Purulia (11) Building Ex situ conservation facility at North Bengal Wild Animals Park, Siliguri
3) Implementation Schedule/ Timing	Year 1 to 3: Studying, planning, and breeding Year 4 onwards: Soft releasing and monitoring

Source: JICA Survey Team

(c) Activity 2.2.4.3 Breeding and Releasing of Fishing Cat

Table 2.25 Description of Activity 2.2.4.3 Breeding and Releasing of Fishing Cat in Dry Lateritic and Alluvial Landscape

1) Description of Activities	Development of protocols for conservation breeding, development of suitable infrastructure for conservation breeding, implementation of breeding and soft releasing of fishing cat.
2) Work Volume	<ul style="list-style-type: none"> (1) Hiring of Research Assistant - 1 (2) Hiring of Zoo Biologist - 1 (3) Hiring of Veterinary Assistant - 1 (4) Hiring of Field Assistant - 1 (5) Equipment (RFID tags, Tag reader, shipment, camera, laptop) (6) Awareness programmes at fringe villages (7) Printing conservation and publicity materials (8) Travel and field work (9) Lab charges (10) Building Ex-Situ conservation facility at Alipore Zoological Garden - 1 (11) Building Ex-Situ conservation facility at Garchumuk Zoological Garden - 1
3) Implementation Schedule/ Timing	Year 1 to 3: Planning, breeding by Alipore Zoological Park Year 4 onwards: Soft-releasing by Jharkhali Animal Park.

Source: JICA Survey Team

(d) Activity 2.2.4.4 Breeding and Releasing of Indian Vulture

Table 2.26 Description of Activity 2.2.4.4 Breeding and Releasing of Indian Vulture in Dry Lateritic and Alluvial Landscape

1) Description of Activities	Establishment of the rescue and rehabilitation centre for Indian vulture species to rescue and rehabilitate the injured wild resident endangered species and then release in the wild once they recover. Investigate the present status and abundance of the Indian species in different districts of West Bengal.
2) Work Volume	<p>The following two types of enclosures will be constructed in the Rescue Centre.</p> <ul style="list-style-type: none"> (1) Quarantine enclosure: Birds brought to the breeding centre will be first kept in this enclosure for a period (maximum 45 days) of time for health check-up. Birds will be kept close enough for visual observations. The enclosure will have perches at different heights. Adequate provision for water will be made. The area of quarantine

	<p>enclosure will be 465.00 m². The enclosure will be constructed in a cool, calm place, and away from human habitation.</p> <p>(2) Rescue Centre: Enclosure for birds after recovery. This enclosure is meant to house recovered birds after treatment. There will be high and low perches wound with coconut rope to provide a rough surface for birds to perch on. This will prevent bumble foot. Some perches will be in shade but none of them will be above the water troughs. The birds will be kept in this enclosure after they fledge in the enclosure. The total area of the enclosure will be 261.08 m². The enclosures will have adequate electricity and water supply and also be equipped with perches at various heights.</p>
3) Implementation Schedule/ Timing	<p>Year 1: Planning, target area/ population selection, etc.</p> <p>Year 1 to 5: Implementation of Conservation Action Plan</p>

Source: JICA Survey Team

(e) **2.2.4.5 Species Recovery Programme for Local RET(South)**

Table 2.27 Description of Activity 2.2.4.5 Species Recovery Programme for Local RET (South)

1) Description of Activities	<p>(1) The identification of important RET plant species to make a long list and conducting rapid survey for those plant species By conducting literature review, interview of key informants and workshops in the district level with various stakeholders, at least 20 RET species in the North and ten RET species in the South are to be selected. For the 30 selected species, rapid survey will be conducted including field census to briefly confirm geographic distribution across the landscape, status of the species and the habitats including survey of forest areas for identification of localities (with GPS coordinates) where these species occur naturally.</p> <p>(2) Identifying factors that underlie a decline and determining which of these factors can be significantly influenced through management Analyse the structure of threat in both natural and socio-economic aspects to identify factors that cause a decline and determining which of these factors can be significantly influenced through management. Identifying ultimate and proximate causes of species decline referring to the IUCN Threat Classification Scheme of Version 3.2. Determining which of these factors can be significantly influenced through management.</p> <p>(3) Selection of RET species for species recovery programme At least 15 species (ten in the North and five in the South) to be selected to develop an individual Species Recovery Plan. For the selection of 15 species, clear criteria should be set up considering at least the following three aspects.</p> <ol style="list-style-type: none"> a. Importance: rare, unique, endanger, fragile, sensitive, and how much important for ecological integrity. b. Urgency: seriousness, rapidness, scale, and future trend of the threat. c. Effectiveness: if those could be protected within the current institutional mandate and implementation structure of the Wbfd effectively, the presence of conservation concern among people. <p>(4) Preparing and implementing the Species Recovery Plan and establishing protection plots. All of the above information will lead to the preparation of Species Recovery Plan for each of the shortlisted identified species. The process may be done in-house or may be outsourced depending on available technical manpower in the forest directorate.</p>
2) Work Volume	For selected 5 spp. All in in suitable habitats (to be identified).

	a. Protection: 5 ha/ RET spp. = 25 ha. b. Plot: 2 plot/ RET spp. = 10 plots
3) Implementation Schedule/ Timing	Year 1: Selection of RET species for species recovery programme Year 2: Establishment of protection plots Year 1 to 5: Implementation of Species Recovery Plan

Source: JICA Survey Team

2.6 Sub-component 2.3: Deltaic Landscape

(1) Activity 2.3.1 Biodiversity Conservation through People's Participation in Protected Area

Table 2.28 Outline of Activity 2.3.1 Biodiversity Conservation through People's Participation in Protected Area in Deltaic Landscape

1) Objective	To conserve biodiversity of distinct genotypes of local species population from localised and landscape-level threats through intensive management in and outside of the PA system with people's participation. To strengthen the stake of the neighbouring communities in conservation of PAs.
2) Rationale	A considerable part of West Bengal's forests, covering more than 30% of its area is under PA network. Presently, there are 15 wildlife sanctuaries and six national parks. While most of PAs are large and houses one or more flagship spp., a few of them located mostly in laterite alluvial part of West Bengal cover a small area and harbour local biodiversity. PAs of later category fails to attract federal funding but serve the useful purpose of conservation of distinct genotype of local populations as well as awareness generation for visitors. They also serve as habitat to various types of fauna wildlife. These PAs are located in places that have little forest or wildlife and are close to urban areas. Given their proximity to urban centres, they receive relatively high number of visitors, and serve as an opportunity for conservation-related education of the civil society. For intensified management of selected PAs of later category, the project proposes taking up four selected PAs for critical activities and infrastructure development. Three of the four small PAs (except Chintamani Kar Bird Sanctuary) also have the facility of Nature Interpretation Centre, one of which is under-construction. The three also have various amenities for visitors including lodging, trails, sitting place, etc., that are in various states of utilisations.
3) Target Area (Landscape, Division)	2.3.1.1 Chintamani Kar Bird Sanctuary South 24 Parganas 2.3.1.2 Bibhutibhusan WLS North 24 Parganas
4) Implementation Structure	To be implemented by DMUs – FMUs for habitat improvement, sanctuary management including tourism-related activities within WLS. To be implemented by DMUs – FMUs – JFMCs for support to SHG members/ entrepreneurs related to community development and livelihood enhancement through eco-tourism.
5) Methodology Applied	Implementation of activities based on the Management Plan and APOs for over five years. Improvement/ strengthening of arrangements for community stake and participation, conservation education, creation of forum type group for community engagement in conservation, and ecotourism.

Source: JICA Survey Team

(a) Activity 2.3.1.1 Chintamani Kar Bird Sanctuary (CKBS)

Table 2.29 Description of Activity 2.3.1.1 Chintamani Kar Bird Sanctuary in Deltaic Landscape

1) Description of Activities	Increase height of boundary wall with concertina wire; extension of rainwater harvesting unit in one existing pond using silpaulin sheet with bamboo piling; submersible pump with Reverse Osmosis (RO) system; maintenance of patrolling and visitor path; repair of toilet facility; renovation and maintenance of staff quarter; informative display boards.
2) Work Volume	(1) Increase height of boundary wall with concertina wire: 1 km (2) Extension of rainwater harvesting unit in one existing pond using silpaulin sheet with bamboo piling: 2 (600 sq. metres each) (3) Submersible pump with RO system: 1 (4) Maintenance of patrolling and visitor path: 1,800 metres (5) Repair of toilet facility: 1 (6) Renovation and maintenance of staff quarter: 1 (2 BHK) (7) Informative display boards: 6 (8) Community mobilisation and awareness creation
3) Implementation Schedule/ Timing	Year 1: Revision of Management Plan (if required); Developing plan for engagement of civil society, school children, bird watchers; Engagement of civil society - creation of “Friends of CKBS”/ “Bird watchers” forum Year 2 to 6: Implementation of habitat improvement and infrastructure development

Source: JICA Survey Team

(b) **2.3.1.2 Bibhutibhushan WLS**

Table 2.30 Description of Activity 2.3.1.2 Bibhutibhushan WLS

1) Description of Activities	Infrastructure development and mobilisation of community and civil society for conservation
2) Work Volume	(1) Construction of chain link fencing: 200 metres (2) Construction of RCC Visitors Kiosk/ rest shed: 1 (3) Development of Orchidarium: 1 (4) Creation of civil society/ local community forum for improved protection and awareness building: 1
3) Implementation Schedule/ Timing	Year 1: Revision of Management Plan (if required), mobilisation of local community Year 2 to 4: Implementation of infrastructure development Year 2 to 6: Development of forum and awareness activities Year 2 to 4: Development of Orchidarium

Source: JICA Survey Team

(2) **Activity 2.3.2 Human-Wildlife Conflict Mitigation**

Table 2.31 Outline of Activity 2.3.2 Human-Wildlife Conflict Mitigation in Deltaic Landscape

1) Objective	To control the straying of tigers from their original habitats in neighbouring villages of STR and mitigate HWC in Deltaic landscape.
2) Rationale	In order to reduce human casualties by tigers, various mitigation measures need to be introduced based on knowledge and experience accumulated in the deltaic landscape of West Bengal. This sub-activity introduces steel-reinforced nylon nets, which may have ten years of life span. Nylon nets along the WLS boundary are commonly used so far, although they have limited life span, and need to be replaced every three to four years.
3) Target Area (Landscape, Division)	STR
4) Implementation Structure	To be implemented by DMUs - FMUs (STR).

5) Methodology Applied	Procurement of steel-reinforced nylon nets and their installation
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Source: JICA Survey Team

(a) Activity 2.3.2.1 Stress Induced Conflict Risk Reduction by Wild Animals

Table 2.32 Description of Activity 2.3.2.1 Stress Induced Conflict Risk Reduction by Wild Animals in Deltaic Landscape

1) Description of Activities	Provision of steel-reinforced nylon nets which may have a life span of ten years life.
2) Work Volume	(1) Procurement of steel-reinforced nylon nets (2) Net replacement: 84 km
3) Implementation Schedule/ Timing	Year1: Procurement of steel-reinforced nylon nets and distribution Year 2 to 5: Net replacement

Source: JICA Survey Team

(b) Activity 2.3.2.2 Veterinary Facility in Sundarbans

Table 2.33 Description of Activity 2.3.2.2 Veterinary Facility in Sundarbans in Deltaic Landscape

1) Objective	To provide treatment and health crisis management of wild animals from translocation to rehabilitation as well as treatment and health crisis management of zoo animals.
2) Rationale	The nearest veterinary hospital catering to wild animals is located in Alipore, Kolkata, which is at a distance of more than 120 kms from the region (Sundarbans Tiger Reserve/ STR and hotspots for Human Wildlife Conflict in South 24 Parganas). The hospital building has already been constructed but equipment and other facilities need to be provided for operationalisation of the hospital.
3) Target Area (Landscape, Division)	Jharkhali, South 24 Parganas catering to STR and southern region of South 24 Parganas Division
4) Implementation Structure	To be implemented by PMU through DMUs – FMUs.
5) Methodology Applied	Procurement of equipment, construction of additional infrastructure. Recruitment of veterinary doctors and assistants to be ensured by the WBFD.
6) Description of Activities	Procurement of equipment for multi-specialty veterinary hospital. Deputation of veterinary doctors and assistants and other necessary staff for the hospital. Construction of hospital waste disposal unit and post-mortem room, incinerator, and quarantine centre (along with existing hospital building). Enhancement of height of embankment over 1,000 metres times 1 metre. Year 6 onward: Operationalisation of hospital
7) Work Volume	(1) Procurement of equipment for multi-specialty veterinary hospital: 1 set each for general requirement, sterilisation, operation theatre, disease investigation and diagnosis, lab and post-mortem related. (2) Construction of hospital waste disposal unit: 1 (3) Construction of post-mortem room including water and electricity supply: 1 (4) Construction of incinerator: 1 (5) Construction of quarantine centre including 2 nos. squeeze cage for tiger and 1 no. for other animals

	(6) Enhancement of height of embankment over 1,000 metres times 1 metre.
8) Implementation Schedule/ Timing	Year 1: Procurement of equipment for multi-specialty veterinary hospital. Deputation of veterinary doctors and assistants and other necessary staff for the hospital. Year 2 to 4: Construction of hospital waste disposal unit and post-mortem room, incinerator, and quarantine centre. Year 2 to 3: Enhancement of height of embankment over 1,000 metres for 1 metre tall. Year 5: Operationalisation of hospital

Source: JICA Survey Team

(3) Activity 2.3.3 Studies on Wild Animals and their Behaviour

Table 2.34 Outline of Activity 2.3.3 Studies on Wild Animals and their Behaviour in Deltaic Landscape

1) Objective	To obtain information on the protection and conservation of the remaining population and habitat of RET wild animals and aquatic/marine biodiversity in West Bengal deltaic landscape.
2) Rationale	<p>2.3.3.1 Assessment of aquatic biodiversity in Sundarbans and territorial waters</p> <p>The Sundarbans was announced as UNESCO World Heritage Site in 1997 and Ramsar Site in 2007. The Sundarbans is shaped with several islands from freshwater commanded streams by utilising the sediment deposition by the Ganga, Brahmaputra, and other river systems. The Sundarbans aquatic habitat is one of the most important natural resources in West Bengal. It supports 53 species of pelagic fish belonging to 27 families, 124 species of demersal fish belonging to 49 families, 7 species of crabs belonging to 3 families, 2 species of gastropods, 6 species of pelecypods, 8 species of locust lobster and 3 species of turtles are reported from the Sundarbans (Acharya and Kamal, D., 1994). This activity will carry out a comprehensive assessment of Sundarbans aquatic/marine ecosystems and biodiversity. The results would provide a basis for developing strategies and action plans for conserving aquatic/marine ecosystems and biodiversity in Sundarbans.</p> <p>2.3.3.2 Studies suggested by Central Asian Flyway</p> <p>The Central Asian Flyway (CAF) covers large parts of Eurasia between the Arctic Ocean and Indian Ocean. It comprises several important bird migration routes, right from the northernmost breeding grounds in Siberia to the southernmost non-breeding areas of West Asia, India, and the Maldives. Over 180 migratory bird species are known to use the flyway. Bird migrations play a crucial role in indicating the health of various ecosystems. However, some of the flyways are globally threatened by various reasons mainly by human economic activities. Migratory birds are known to be bio-indicators for the flyway regions, as they fly past various biomes such as forests, grasslands, wetlands, and alpine vegetation. India is the core country of CAF. “India’s National Action Plan (NAP) for Conservation of Migratory Birds and their Habitats along Central Asian Flyway (2018-2023)” has listed a total of 171 waterbird species that use this flyway region in India. This sub-activity would complement the commitments of Indian government in NAP and provide a basis for developing strategies and action plans to conserve CAF and associated biodiversity and habitats in West Bengal.</p>
3) Target Area (Landscape, Division)	2.3.3.1 Assessment of aquatic biodiversity in Sundarbans and territorial waters STR, 24-Parganas South

	2.3.3.2 Studies suggested by Central Asian Flyway STR, 24-Parganas South, 24-Parganas North, East Medinipur, Birbhum, Nadia Murshidabad, Baikunthpur, Howrah, Jalpaiguri, Jaldapara, BTR
4) Implementation Structure	2.3.3.1 Assessment of aquatic biodiversity in Sundarbans and territorial waters To be managed by PMU, sub-contracted to capable institution such as CSIR-National Institute of Oceanography (NIO), Goa, India. 2.3.3.2 Studies suggested by Central Asian Flyway To be managed by PMU, sub-contracted to capable institution such as West Bengal Biodiversity Board (WBBB), Zoological Survey of India (ZSI).
5) Methodology Applied	Carrying out investigation by capable sub-contractor through various survey methods depending on the target group and target site.

Source: JICA Survey Team

(a) **Activity 2.3.3.1 Assessment of Aquatic Biodiversity in Sundarbans and Territorial Waters**

Table 2.35 Description of Activity 2.3.3.1 Assessment of Aquatic Biodiversity in Sundarbans and Territorial Waters

1) Description of Activities	This sub-activity will implement comprehensive assessment on biodiversity in the aquatic/marine ecosystems in the Sundarbans and associated territorial waters to obtain baseline information/data. The target aquatic biodiversity comprises freshwater ecosystems with, ponds, reservoirs, rivers, streams, groundwater, wetlands as well as marine ecosystems, which makes up estuaries, salt marshes, mangroves, and algal colonies. The assessment would be two-fold, ecological and conservation values assessments, and social and community values assessment.
2) Work Volume	(1) Preliminary Survey. 1.00 (2) Field work including training, transportation, engagement of persons and collection of data. 32.00 (3) Analysis of data. 3.00 (4) Preparation of Preliminary Report and discussion. 2.00 (5) Preparation of Final Report. 2.00 Total: INR 4,000,000
3) Implementation Schedule/ Timing	Year 1: Procurement and contracting Year 1 to 3: Implementation of planned studies

Source: JICA Survey Team

(b) **Activity 2.3.3.2 Studies Suggested by Central Asian Flyway**

Table 2.36 Description of Activity 2.3.3.2 Studies Suggested by Central Asian Flyway

1) Description of Activities	This sub-activity will be a part of implementation of India's National Action Plan (NAP) for Conservation of Migratory Birds and their Habitats along Central Asian Flyway (2018-2023) in the state level with strong emphasis on the Component 1: Species Conservation. The following are the specific activities: (1) Complement information and data for national inventories of the stop-over and wintering sites of migratory birds and population status (including wetlands and terrestrial habitats such as pastures and farmlands). (2) Formulate Single Species Action Plan(s) (SSAP) for coordinated conservation measures for select important migratory species to a favourable conservation status within West Bengal as high priority for developing SSAP is listed in NAP.
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	<p>(3) Compile lists of migratory birds being hunted, hunting seasons and trade patterns to ensure prohibition enforcement, and project impacts of such hunting on flyway scale populations.</p> <p>(4) Assessing the threats posed to migratory birds due to feral dogs, sand and boulder mining, and land use changes along with recommend site specific measures.</p> <p>(5) Propose migratory bird conservation initiatives through local community participation, including citizen science groups.</p>
2) Work Volume	<p>(1) Preliminary Survey. 2.00</p> <p>(2) Field work including training, transportation, engagement of persons and collection of data. 88.00</p> <p>(3) Analysis of data. 6.00</p> <p>(4) Preparation of Preliminary Report and discussion. 2.00</p> <p>(5) Preparation of Final Report. 2.00</p> <p>Total: INR 10,000,000</p>
3) Implementation Schedule/ Timing	<p>Year 1: Procurement and contracting</p> <p>Year 1 to 3: Implementation of planned studies</p>

Source: JICA Survey Team

3. Component 3: Livelihood Improvement

3.1 Component Objective

The objective of Component 3 is to strengthen community resilience against adverse impacts of climate change in each landscape of the three landscapes through community development activities, livelihood improvement, and improved access to traditional medicine.

3.2 Rationale

Communities living in and around forest areas in three project landscapes have been organised into JFMCs to jointly undertake the forest and biodiversity conservation. These communities scattered across the state and have different socio-economic background. Thus, the interventions to respond to their requirement vary from landscape to landscape. Thus, the activities in this component are planned landscape-wise and designed with flexibility to cater to varying requirements of the community.

3.3 Communities Component Structure

The activities in this component are planned to cover all three landscapes of Hills and North Bengal (H&NB), Dry Lateritic and Alluvial (DL&A), and Deltaic Landscapes (DL) except Activity 3.5, which will be implemented in H&NB and DL&A only.

Table 3.1 Structure of Component 3 Livelihood Improvement

Activities	Subcomponents/ Landscapes		
	1. H&NB	2. DL&A	3. DL
3.0. Preparatory Works (all landscapes) i) Preparation of Manuals and Guidelines ii) Deployment of Technical Agency for IGA Support iii) Finalisation of Selection Criteria of JFMCs & Selection of JFMCs	Yes	Yes	Yes

3.1.1, 3.2.1, & 3.3.1 Preparatory Activities for JFMCs (three batches) separately at each landscape 3.1.1.1, 3.2.1.1, & 3.3.1.1 Community Mobilisation 3.1.1.2, 3.2.1.2 & 3.3.1.2 Reorganisation/ Reconstitution of JFMCs and Confirmation of Demarcation of JFMC Boundaries 3.1.1.3, 3.2.1.3 & 3.3.1.3 Familiarisation of Project to JFMC 3.1.1.4, 3.2.1.4 & 3.3.1.4 Micro Planning 3.1.1.5, 3.2.1.5 & 3.3.1.5 Community Development Activities	Yes	Yes	Yes
3.1.2, 3.2.2 & 3.3.2 Support for IGA	Yes	Yes	Yes
3.1.3 & 3.2.3 Support for Community Well-being (Traditional Healers)	Yes	Yes	
3.1.4, 3.2.4 & 3.3.3 Support for Community Mobilisation (Extension Worker)	Yes	Yes	Yes

Source: JICA Survey Team

3.4 Site Selection and Identification of JFMCs

JFMCs will be selected as a unit of project implementation from the area where Component 1 and 2 activities are implemented. Selection criteria may include 1) consent of the JFMC members; and 2) keen interest in JFM and collective action towards human-wildlife conflicts. The distribution of JFMC and divisions by landscape are as per **Attachment 2**.

3.5 Description of Component 3 Activities

(1) Activity 3.0 Preparatory Works (All Landscapes)

(a) Preparation of Manuals and Guidelines

To train staff on process, approach and methods, timeline, roles, and responsibilities of stakeholders, and to maintain uniformity in planning and implementation of the project activities across the DMUs/FMUs and JFMCs, while PMU will review and update the following manuals and guidelines.

- JFMC Management and Operational Manual, Community Organising Guideline
- Community Organising Guideline
- Microplanning Manual
- Guideline of Selection of SHG/Livelihood Groups/Individual Entrepreneurs
- SHG and Microfinance, IGA Management and Operational Guideline
- Guideline for Community Infrastructure Selection and Development including Operation and Maintenance
- Guidelines for Gender Mainstreaming

1) Implementation Schedule

Table 3.2 Benchmarks in Preparation of Guidelines and Manuals

Guidelines/ Manuals	Due Date
Preparation/Updating of JFMC Management and Operational Manual, Community Organising Guideline	6/2024
Preparation/Updating of Community Organising Guideline	8/2024
Updating of Microplanning Manual	7/2024
Updating of Guideline of Selection of SHG/Livelihood Groups/Individual	8/2024

Entrepreneurs	
Preparation/Updating of SHG and Microfinance, IGA Management and Operational Guideline, Gender	12/2024

Source: JICA Survey Team

(b) Deployment of Technical Agency for IGA Support Fund Management

To effectively extend support for willing and capable SHGs to take up IGAs, revolving fund management ensuring loan repayment and business support will be required. For this purpose, PMU shall qualify external agencies having microfinance management and livelihood support expertise at state level.

1) Implementation Methodology

- PMU will prepare RFP and procure a qualified agency through local competitive bidding (LCB).
- PMU will form an evaluation committee which will evaluate proposals.
- Qualified agency will be contracted for providing services as per TOR on a contractual basis for a period of four years. (Indicative TOR for external agency is given in **Attachment 8.8.1.**)

2) Implementation Schedule

Table 3.3 Tasks and Benchmarks for Deployment of Technical Agency for IGS Support Fund Management

Task	Benchmark
Preparation of Guidelines and Tender Document	10/2025
Opening of Tenders and Evaluation by PMU	11/2025
Selection of Technical Agency Based on Evaluation	12/2025
Signing of Contract Between PMU and Technical Agency	1/ 2025
Deployment of	4/2026

Source: JICA Survey Team

(c) Finalisation of Selection Criteria of JFMCs and Selection of JFMCs

JFMC will be selected as a unit of project implementation from the area where Component 1 and 2 activities are implemented. The selection criteria will be finalised by PMU before the initiation of actual selection process. Based on the criteria, FMU will select JFMCs for the project. The proposed selection criteria is as per **Attachment 2.**

1) Selection of JFMCs in Batches

There will be a total of three batches in each of three landscapes during the project implementation period. The selection schedule and the indicative number of JFMCs to be selected are given in the table below.

Table 3.4 Number of JFMCs to be Selected and Benchmark

Batches	Total No of JFMCs to be Selected	Benchmark
Batch 1	200	Apr. – Jun. 2024
Batch 2	300	Apr. – Jun. 2025
Batch 3	100	Apr. – Jun. 2026

Source: JICA Survey Team

(2) Activity 3.1.1, 3.2.1, 3.3.1: Preparatory Activities for JFMCs (Three Batches)

This section covers the preparatory activities for JFMCs to be undertaken under 3.1.1, 3.2.1, and 3.3.1 in the Implementation Plan (IP). This activity will also be undertaken repeatedly after selection of JFMCs in each batch in all three landscapes following the procedure as depicted below.

Participation of JFMCs is vital in achieving project activities proposed to be undertaken at JFMC level by the community. Therefore, the project will undertake activities to enable community to be ready with robust institutional arrangement, equipped with project information, expected benefits, and their responsibilities before microplanning, livelihoods, and other activities initiated.

(a) Activity 3.1.1.1, Activity 3.2.1.1, Activity 3.3.1.1: Community Mobilisation

Strengthening mutual trust and relationship with transparency is a prerequisite for enhanced community involvement and developing belongingness as they need to be familiarised with the project objectives, activities, roles, and responsibilities of key stakeholders and expected benefits, etc.

a) Objective

- Seek JFMC cooperation and participation in planning and implementation of project activities.
- Reinforce rapport with JFMC, strengthen relationship between the Project and JFMC and among JFMC members and other villagers.
- Strengthen JFMCs institution through reorganisation/reconstitution.
- Clarify mutual roles and responsibilities of DMU/FMU and JFMCs and promote community interests in project.

b) Implementation Structure

- FMU will plan and organise community mobilising activities in close coordination with respective DMU.
- FMU will implement the activity with support from extension workers and the concerned Beat Officer and forest guards for the implementation of community mobilisation activities in JFMCs.

c) Implementation Process

- PMU will develop a short Orientation Manual and DMU will prepare a schedule/programme to conduct activities in consultation with FMU.
- FMU will prepare a schedule/plan for community mobilisation at JFMC level and get approved by DMU well in advance of holding mobilisation meeting.
- FMU will communicate to JFMCs about the meeting date, time, and place and conduct mobilisation activities accordingly.
- In the meeting, roles and responsibilities of the stakeholders will be shared. JFMCs members will also be familiarized with project objectives and confirmation of demarcation of JFM boundary shall also be obtained under community mobilisation subcomponent.
- Consent of JFMCs members in participation in WB-FBCCCR shall be ensured and resolution of agreement signed between JFMC and FMU.

(b) Activity 3.1.1.2, 3.2.1.2, and 3.3.1.2: Reorganisation/ Reconstitution of JFMCs and Confirmation of Demarcation of JFMC Boundary

1) Reorganisation/ Reconstitution of JFMCs

Since some households may not have been enrolled as a member of JFMCs or detached from JFMCs, reorganising and reconstituting JFMC shall be conducted. The process will ensure membership to the

households, which were not part of JFMC-based activities. Reorganisation of executive committee of JFMC will provide opportunities to the members to be elected as executive committee members.

a) Objective

- Revive and strengthen cohesiveness among JFMC members, trust, and relationship.

b) Description of Activities

- General Body meeting shall be organised. In the meeting, executive committee shall be reconstituted and JFMC membership updated with inclusion of new eligible members in JFMC as per the by-laws of JFMCs.
- Proceedings of the meeting shall be recorded and duly signed by the JFMC members present.

c) Implementation Structure

- FMU will take the lead in planning and organising JFMC general meeting for reorganisation /reconstitution of JFMC activities in close coordination with the respective DMU.

d) Implementation Methodology

- Prior to holding any meeting in JFMCs, DMU will orient all FMU in charge, beat officers, and forest guards including FMU staffs and extension workers about the duties/roles/responsibilities of JFMC members, Executive Committee members and Forest Department, rules, regulations for termination of JFMC membership, dissolutions of Executive Committee, benefit sharing mechanism, procedure of reconstitution of Executive Committee as per JFM Resolutions, 2017.
- DMU in consultation with FMU and JFMC members to organise General Body meeting to reorganise/ reconstitute JFMC. Election of new executive committee members shall be undertaken and minutes of meeting shall be kept.
- FMU will hold meeting with JFMC for reorganisation of JFMC /reconstitution of EC.
- Beat Officer with the support of Extension Workers (EW) will organise General Body meeting of all JFMC members at a common place, on time, date, and place fixed.
- EW along with Forest Guard will follow up with JFMC members and persuade to participate to ensure maximum participation.
- Beat Officer who is also a Member Secretary will organise Annual General Meeting (AGM) in JFMC whose AGM is due for the current year. Financial and physical achievements of JFMC along with salient features of JFM resolution including benefit sharing mechanism will be presented and proceedings of AGM will be recorded.

2) Confirmation of Demarcation of JFM Boundary

Since designated forest area protected by a JFMC has no defined digital boundary and physical demarcation, which may lead to dispute with other JFMCs during any kind of benefit sharing/forest resource use/extraction, harvesting of NTFPs etc., demarcation of JFM boundary shall be undertaken.

a) Objective

- Confirm JFM forest area prior to the project intervention and resolve disputes, if any.
- Ensure the proper benefit sharing by setting the clear boundary of JFM forest area.

b) Implementation Structure

- FMU will work with JFMCs to confirm JFMC boundaries. Thereafter, the pillar positing will be done along the boundaries jointly by FMU and JFMC members. (Digitisation of the boundary will be done under Component 4.)

c) Implementation Methodology

- FMU will initiate the process of General Body meeting of the concerned JFMCs.
- FMU will review the available records to confirm JFMC boundary and will identify/explore whether there are any disputes with other JFMCs regarding boundary. In case of any disputes, that should be resolved prior to the implementation of the project activities.
- Confirmation of area protected by JFMC and physical boundary seeking consent for demarcation shall be obtained from JFMC in writing during the General Body meeting.
- Brief proceedings of meeting shall be prepared by the Member Secretary of JFMC and duly signed by the member present during the meeting. Proceeding will include, date, time, and place of meeting, topic discussed, etc.

d) Implementation Schedule

Table 3.5 Work Items and Benchmarks concerning Confirmation of Demarcation of JFM Boundary

Work Item	Benchmarks
Preparation of Short Orientation Manual, Schedule/Programme	Batch I 1-3/2024 Batch II 1-3/2025 Batch III 1-3/2026
Orientation and Familiarisation of Project to DMU/FMU Staff and Contractual Staff	Batch I 1-3/2024 Batch II 1-3/2025 Batch III 1-3/2026
Reorganisation/Reconstitution of JFMCs and Confirmation of JFM Boundary	Batch I 1-3/2024 Batch II 1-3/2025 Batch III 1-3/2026

Source: JICA Survey Team

e) Budget:

INR 2,500 per JFMC.

(3) Activity 3.1.1.3, 3.2.1.3, 3.3.1.3 Familiarisation of Project to JFMC

To strengthen mutual trust and relationship with transparency is a prerequisite for enhanced community involvement and developing belongingness, WB-FBCCCR objectives, impact of climate change, activities, roles, and responsibilities of key stakeholders and expected benefits shall be familiarised among JFMC members.

a) Objective

- Inculcate JFMC support and participation in the project.
- Familiarise JFMC members with the project objectives, activities, roles, and responsibilities of key stakeholders and expected short- and long-term benefits to JFMC members from the project, etc.
- Inform them about project implementation modalities and further develop understanding on the objectives that is to enhance capacity of JFMCs/SHGs in developing resilience through implementation of the project, their benefits, and their roles in the project.

b) Implementation Structure

Familiarisation meeting will be organised in JFMC by FMU in close coordination with the respective DMU.

c) Description of Activities

- FMU will hold meetings with JFMC members and share brief descriptions of project objectives, key activities under each subcomponent, institutional arrangement to plan and implement activities at JFMC level. Advance notices will be given to JFMC members to secure their attendance.
- Landscape specific climate change impact on community will be explained as indicated below.

Hills and North Bengal landscape – The facilitator will explain about climate change-induced disasters like flood, heavy rain, landslides on forest, agriculture, and on other livelihood resources, wildlife impact on human lives, cattle, crop, and house, etc.

Dry Lateritic and Alluvial landscape – Impact of recurrent drought, scanty rain on forest, agriculture, fishery/animal husbandry and on other livelihood resources, wildlife impact on human lives, cattle, crop, and house, etc.

Deltaic Landscape – Impact of cyclone, heavy rain, and flood on houses, footpath/village road, agriculture, fishery, and on other livelihood resources, impact of tiger on human lives/cattle, etc.

- Roles and responsibilities of the project and JFMCs shall be explained in the meeting.
- Memorandum of Understanding (MoU) will be signed by JFMC represented by the President and FMU. Minutes of meeting will be prepared.

d) **Implementation Schedule and Budget**

Table 3.6 Benchmarks of Activity 3.1.3, 3.2.3, 3.3.3 Familiarisation of Project to JFMC

Description of the Activity	Benchmarks
Familiarisation of Project to JFMCs Budget: INR 2,000 per JFMC	Batch I 1-3/2024 Batch II 1-3/ 2025 Batch III 1-3/ 2026

Source: JICA Survey Team

(4) **Activity 3.1.1.4, 3.2.1.4 and 3.3.1.4 Micro Planning**

JFM-based activities and their implementation requires people-centric participatory planning and community collaboration. A process and approach need to be followed by FMU where villagers' voices are heard, appreciated, and their choices and aspirations recognised rather than imposing upon them the ideas and priorities by outsiders. Out of many planning process and approach, microplanning at the village level provides scope for community involvement and say in planning and interventions. All activities planned by JFMC for implementation need to be included in the micro plans.

Microplanning will follow a set of approaches, processes, and methods through which JFMCs and other village-level institutions collectively identify resource status, problems/constraints in conservation, possible mitigation approaches and measures, etc., and develop a plan for the improvement of quality of forests. Through this exercise, JFMCs will identify potential IGAs to be implemented by SHGs or interest groups with the project support.

Micro plan will serve as guiding and reference document for JFMCs and the project for implementation of the project activities.

a) **Objective**

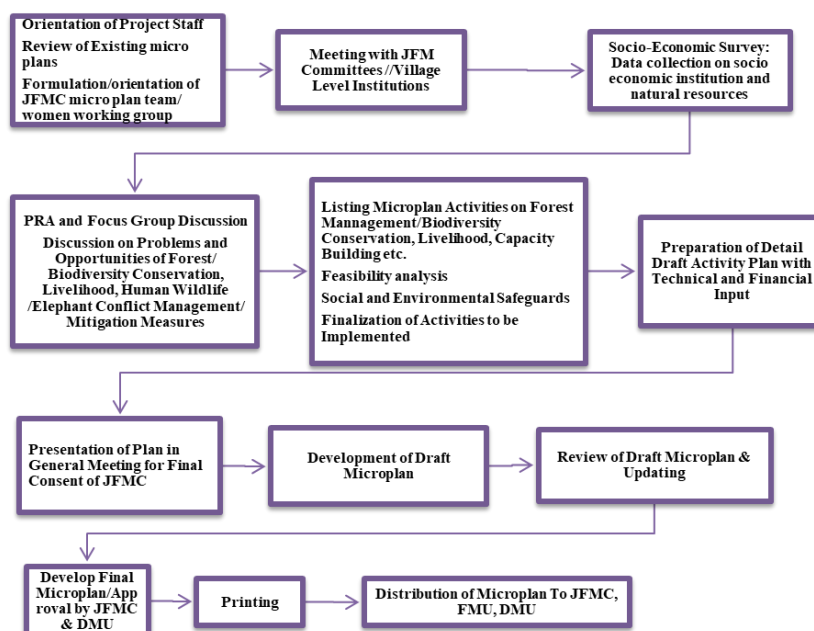
- Identify the needs for forest and biodiversity conservation and livelihood improvement
- Assess the potential for convergence and prepare a convergence plan
- Develop a plan for JFMCs and the project to implement the community level interventions

b) **Implementation Structure**

- FMU will be assisted by extension workers and the concerned frontline staffs.

c) Microplanning Process

The process of microplanning involves a range of participatory methods including focus group discussion, mapping, and uses of other Participatory Rural Appraisal (PRA) tools. The process shall be depicted in the microplanning manual which will be prepared by PMU. Indicative process of microplanning is elaborated in **Attachment 8.8.2**.



Source: JICA Survey Team

Figure 3.1 Indicative Stages of Microplanning

d) Implementation Schedule

Table 3.7 Activity and Benchmarks for Microplanning

Activity	Benchmarks
Orientation of FMU Level Contractual Staff and field staff on Microplanning	Batch I 12/2023-1/2024
	Batch II 1/25- 2/2025
	Batch III 1/2026-2/2026
Orientation of Microplanning Team (JFMC level) by FMU	Batch I 2/2024
	Batch III 1/ 2025
	Batch III 1/2026
Microplanning	Batch I 4/2024-6/2024
	Batch II 4/2025-6/2025
	Batch III 4/2026-6/2026

Source: JICA Survey Team

(5) Revisiting of Microplan

General Body meeting shall be held to review the progress of implementation after three years of implementation and make necessary changes in the microplan. FMU and extension worker along with the concerned WBFD frontline staff shall attend the exercise. During the review, achievements,

implementation process, and fund availability shall be reviewed and discussed, the targets and planned activities may be added or omitted as per need of village.

a) Implementation Method

Date, time, and place of meeting shall be communicated by the FMU well in advance before holding a review. Extension worker will follow up with the EC of JFMC to ensure participation of maximum number of JFMC members.

Brief proceedings of review shall be prepared by the Member Secretary of JFMC and signed by the member present during the meeting. Revised microplan should also be prepared by the JFMC executive committee members with necessary assistance from extension worker and FMU.

b) Implementation Schedule and Budget

Table 3.8 Implementation Schedule and Budget for Revising of Microplan

Description of Activity	Schedule
Revisit of Microplan Budget: INR 1,000 per JFMC	Batch I 4/2028-6/2027
	Batch II 4/2029-6/2028
	Batch III 4/2030-6/2029

Source: JICA Survey Team

3.6 Activity 3.1.1.5, Activity 3.2.1.5, Activity 3.3.1.5 Entry Pointe Activity (EPA)/ Community Development Activities (CDA)

The Community Development Activities (CDA) is to be undertaken while the project activities are being initiated. The objective of this activity is to develop rapport between the project and the community by planning and implementing an activity jointly. This will be the first activity of the project of the JFMC. The type of activities to be supported by the project as EPA/ CDA will be defined in the guideline prepared by PMU and the emphasis will be given to the creation of community assets, which will benefit the community at large and reinforce their resilience towards climate change impacts. The planning process of this activity is mostly community driven with adequate support from FMU and extension worker. Furthermore, convergence shall also be considered if any other government schemes are available in the locality in order to enhance the efficiency of the resource utilisation. For this sake, the concerned block level officers shall also be invited to take part in the planning process.

(1) Planning of EPA/ CDA

The identification of the infrastructures to be developed under EPA/ CDA will be undertaken as part of the microplanning process as elaborated in Attachment 8.8.2. As stated above, convergence is a key to amplify project investment and thus, the convergence mechanism by creating the District Advisory Committee where all line departments are requested to take part and discuss and action plans on the convergence.

In this case, JFMC is constituted by more than one village having large number of households. In order to consider the needs of maximum households in a village or needs of all constituent villages of JFMC, initial discussion for identifying the activity shall take place at the lower administrative unit or settlement area (i.e., mouza, village, etc.). The outcome of the discussion at each unit level can be aggregated and presented in a large gathering for final selection based on feasibility and available funds.

The technical design required for CDA works may need to be done by engaging a contractor by JFMC under the guidance of FMU, which procedure shall also be depicted in the Guideline on CDA which will be prepared by PMU. Work schedule will also be developed in a prescribed format along with cost, timeline, and other details and shall be included in the microplan.

(2) Indicative Type of Community Development Activities to be Considered in the Project

Since this project is aiming at enhancing the climate change resilience at the community level, thus, CDA, which is to be supported by the project, shall also be relevant to the project objective. Furthermore, the activity, which has benefits for only a few people, should be avoided. During the microplanning, the community will be encouraged to elaborate impacts and suggest types of infrastructures to be created. PMU will elaborate the planning process, selection criteria of community development activities, and implementation method in CDA guideline prior to the commencement of microplanning. The indicative list of community development activities is given in the table below and selection criteria is as per **Attachment 2**.

Table 3.9 Indicative List of CDAs

Landscapes	Recommended Community Development Activities
Hills and North Bengal	Foot path, processing centre/ aggregation centre for IGA products, solar light, ecotourism facilities.
Dry Lateritic and Alluvial	Small check dams, submersible tube wells with irrigation channel, water tank with outlet, processing centre/ aggregation centre for IGA products, solar light.
Deltaic	Flood defence infrastructure, tube well, processing centre/ aggregation centre for IGA products, community halls, healthcare centre, foot path.

Source: JICA Survey Team

(3) Developing Mechanism of Operation and Maintenance

The community assets created under EPA/ CDA need to be sustained and maintained by the concerned JFMC. Thus, appropriate operation and maintenance mechanism shall be developed based on the guideline provided by PMU. Up to five members of the executive committee members of JFMC may constitute an O&M committee. The PMU will develop a guideline for formation of committee, roles and responsibilities and accountability of members, fund arrangement for maintenance, etc. Based on the guideline, FMU-assisted and extension workers shall facilitate the operation and maintenance of the infrastructure. Depending on the type of the infrastructure, user fees may also be collected from the users for maintenance that will supplement the maintenance fund which will set aside 5% of the total allotted fund for EPA/ CDA by the project.

(4) Implementation Schedule and Budget

Table 3.10 Budget and Schedule for EPA/ CDA

Activity	Schedule
Community Development Activities Budget: INR 816,000 per JFMC	Batch I 7/2024-6/2025 (12 months)
	Batch II 7/2025 -6/2026 (12 months)
	Batch III 7/2026-6/2027 (12 months)

Source: JICA Survey Team

3.7 Activity 3.1.2, 3.2.2, and 3.3.2 Support for Income Generation

Climate change has manifested differently in different landscapes in the state. Cyclone and high tide in Sundarbans (Delta) invading agriculture land and pond that resulted in excessive salinity and scarcity

of fresh water. This impacts on agriculture and fish culture in the locality. Areas in Dry Lateritic and Alluvial landscapes often face drought and water scarcity resulting into loss of crop and productivity (e.g., rice). Farmers in parts of Dry Lateritic and Alluvial (such as Jahrgram, Medinipur, Bankura South and North and Purulia divisions) and north landscapes are also wary of growing paddy, maize, vegetables due to fear of damage by elephants. Impact of wildlife conflict is visible on agriculture as in the north plain (Belakua range, Baikunthpur division) as farmers continue to replace paddy with tea garden for sustained income.

Based on the analysis of climate change impacts that are faced by the people, the project will support the willingness and capabilities of SHG/Livelihood Interest Groups and individual entrepreneurs for the implementation of small- and micro-scale enterprises. Livelihood activities most suitable for a particular landscape will be selected and implemented. Some activities will be common across the three landscapes; whereas, specific activities will be chosen for each landscape. This is a revolving fund-based activity.

1) Objective

- Create opportunities for women to take part in economic activities.
- Enhance resilience against climate change impacts by supplementing household income so that families can cope with economic hardships.

2) Description of Activities

The following activities shall be undertaken as per the guideline issued by PMU. The field level activities are implemented by FMU and extension worker with support from the Technical Agency engaged by PMU.

a) Step 1: Cultivating Interest and Willingness among Women JFMC Members

The activities will be initiated by providing information to women JFMC members by FMU with support from extension workers and the Technical Agency which is engaged by PMU. As this activity will again be a need-based and community-driven, the project shall approach the community to cultivate their willingness and interest to undertake economic activities. The project may support both existing SHGs, newly formed livelihood interest groups, and individuals as long as they are members of JFMCs. Once the women indicate their interest in starting business or upgrading an on-going livelihood activity, an application shall be prepared with support from an extension worker and FMU for screening. Applicants having the following socio-economic background will be considered on a priority basis.

Table 3.11 Indicative Eligibility Criteria for IGA Support Fund

Category of Applicant	Indicative Eligibility Criteria
Group	Members of the group are: <ul style="list-style-type: none"> - JFMC members. - More than 50% of the group members are BPL/ SC/ ST/ OBC category. - No members of the group have defaulted in existing SHGs. - The group has defined roles and responsibilities in undertaking the business enterprise. - All members have agreed to apply for loan, undertake the business activity and fulfil their roles and responsibilities. - All members have agreed to be abide by the guideline issued by PMU in loan application and undertaking business enterprise.

Individual	<ul style="list-style-type: none"> - S/he is a member of JFMC. - S/he may belong to weaker section of the community. - S/he is not a defaulter. - S/he is already engaged in livelihood activity and willing to expand but the difficulties in having access to financial support.
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Source: JICA Survey Team

b) Step 2: Screening and Identification of Business Activity

The groups or individuals that are willing to take part and meeting the eligibility criteria (Table 8.8.12) may submit the pre-loan application form with the potential business activity. While identifying the business activity, the applicants will be supported by FMU, extension worker, and the Technical Agency to analyse the situation and identify economically viable activities. While undertaking this, the project shall also take into consideration developing a cluster in the locality or potential for linking the project-supported business activity to be integrated into cluster-based activities promoted by other similar projects or government scheme in the locality.

Some basic points to be considered at this stage include existing knowledge and skill base of SHG/Livelihood Groups/individual entrepreneurs, availability and accessibility of raw materials whether they are in the village, and marketing potential in local and regional market. In addition, means and roles and responsibilities of each group member to execute the potential business activities shall be discussed and studied as this is particularly an important point to consider when the applicant is a group. Roles and responsibilities and the commitment shall be well discussed and agreed upon. Previous experience in doing business is also an asset be whether it is positive or negative and such reflection shall be done at this stage. The indicative list of business activities in each landscape are given below.

Table 3.12 Indicative List of Business Activities in Each Landscape

Landscape	NTFP-based	Farm-based	Non-Farm-based
Hills and North Bengal	Sal leaf collection, aggregation and processing for leaf plate making	Raising of lemon tree for fruits production, vegetable farming, floriculture (in hills), spices	Piggery, goatery, poultry, ecotourism based in hills (food stall, souvenir shops), duckery, and fishery
Dry Lateritic and Alluvial	Sal leaf collection, aggregation and processing for leaf plate making, collection, processing, and processing of babui/sabai grass for rope, mat, crafts making, palm mat and gur, aggregation of mahua flower and seed, broom of kharang grass	Raising of lemon tree for fruits production, vegetable farming, spices	Piggery, goatery, poultry
Deltaic	Bee keeping/ apiary	Cultivation of salt resilient paddy varieties, sunflower, vegetable farming, etc.	Pisciculture and crabs rearing/fattening in fresh water/salty water pond, organised sea fish and crab marketing, goatery, poultry, duckery

Source: JICA Survey Team

After identification of IGA, the beneficiary will submit loan application in a prescribed format/template developed by PMC. The loan application will be screened based on criteria developed by PMC and if found suitable, the same will be approved by DMU.

c) Step 3: Business Plan Development Support and Approval

After the selection of IGAs, product-based specific business plan shall be developed by the beneficiary with support from the Technical Agency. The business plan will be based on market potential of the product, fund availability, and capacity of beneficiary. The business plan developed in a prescribed format/template developed by PMC will be submitted to DMU along with the loan application for onward submission to PMU for final approval. The indicative business plans for sal plate and spice cultivation are given in **Attachment 8.8.3**.

d) Step 4: Support for Business Management

The project will also provide capacity building support for business management as well as skills development. The following are key dimensions in the capacity development programme under Component 3. The Technical Agency along with PMC will identify the training needs and organise or directly undertake the training activities. Day-to-day field level support will be undertaken by FMU and extension worker under close guidance of the Technical Agency and PMC/ PMU.

➤ **Institutional Development Training**

SHG/Livelihood Groups/individual entrepreneurs will be oriented to make acquainted with livelihood improvement objectives, utilisation of revolving funds/accounting procedures, etc., before initiation of activities. Effort shall be made to open separate register of receipt and expenditure of revolving fund, expenditure, and income records from IGAs.

➤ **Training on Sustainable Harvesting (in case of NTFPs)**

JFMC members gather NTFPs (leaves, bark, fruit, flower) of many species unsustainably without adhering to sustainable harvesting protocol. These NTFPs have good marketing potential.

Training on sustainable harvesting of NTFPs, especially on the NTFPs which have been selected for IGA will be conducted involving SHG/Livelihood Group concerned.

Qualified resource persons from the medicinal plant board/ university/ other institutions will act as resource person. Simple material in local language with diagrammatic representation of harvesting methods will be developed and distributed among the trainees.

➤ **Skill Development for Value Addition on IGA**

After selection of IGA and organisational development training, skill development will be undertaken for quality product development (in case of NTFP-based), rearing improved breeds (in case of goater, piggery, poultry), salt resilient crop cultivation, demand driven floriculture, etc., with practical demonstration. Each training will have inbuilt mechanism of follow up and hand holding. Beneficiaries will be trained on value addition on IGA prior to the implementation of IGA.

3) IGA Support Fund Management

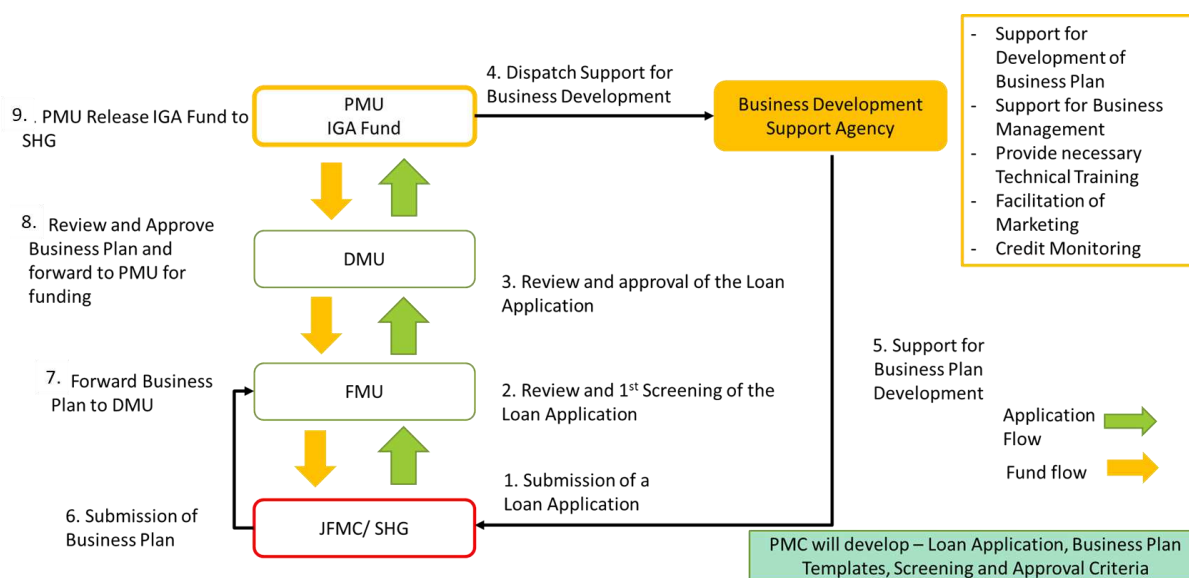
Limited opportunity is available for diversified income due to inadequate financial/technical and institutional support. It has been observed from the primary survey by JICA Survey Team and existing documents available, that most of the SHGs invested microcredit from West Bengal State Rural Livelihood Mission (WBSRLM) in health care, children education, agriculture works, daughter/son marriage, and house construction. These SHGs hardly invest on IGA. Under WBSRLM schemes, SHG must repay loan within a year to avoid penalty and to be able to get the next loan. This not only causes stress but also discourages them to implement IGAs, which often take one to two years to pay in return. Phase II will make available microfinance on liberal terms and conditions giving sufficient period to

SHGs for repayment which will be determined based on IGAs type. Detailed modality of fund management shall be developed by the Technical Agency and PMC.

a) Implementation Structure

FMU, extension workers, and concerned frontline staffs of WBFD will steer the process under the guidance of the Technical Agency engaged by PMU. PMC will also provide the technical guidance to the Technical Agency as well as the field level.

The Technical Agency will provide support for the management of IGA support fund, business plan development, day-to-day technical guidance in business operation and management, marketing, and capacity development. IGA support fund management and roles and responsibilities of the Technical Agency (Business Development Support Agency in the figure below) and PMC are given in the figure below.



b) Implementation Schedule

Table 3.13 Implementation Schedule for IGA Support

Activity and Budget	Schedule
Support for Income Generation (all Landscapes) Budget: INR 300,000 per JFMC is estimated.	Batch I 4/2025 – 3/2028 (36 months)
	Batch II 4/2026- 3/2029 (36 months)
	Batch III 4/2027-3/2030 (36 months)

Source: JICA Survey Team

3.8 Activity 3.1.3 and 3.2.3 Support for Community Well Being (Local Traditional Healers)

Use of medicinal plants parts (leaves, bark, root, juice, and whole plant) are prevalent in rural forested West Bengal to cure diseases like liver ailment, influenza, jaundice, snake bite, and bone fracture. There are traditional healers in the villages who have acquired knowledge and administer medicine on local population especially tribals/SC/poor in the proposed project areas where medical facility is scarce. The traditional healers, although they have good knowledge on treating common ailments using medicinal plants, often lack financial support and opportunities for disseminating knowledge among common villagers.

The knowledge of traditional healers needs to be widely utilised in health care enhancement of community awareness on health care value of medicinal plants which may ultimately lead to improved community-based conservation. Further, WBFD has established medicinal plant nurseries under the

DMUs/FMUs proposed in the project, which is an attempt to conserve the species and promote the use of medicinal plants for health improvement/ well- being of the people. However, so far, the latter was not fully achieved. Therefore, the project will support this initiative as shown below. This activity will only be implemented in Hill and North Bengal landscape and Dry Lateritic and Alluvial landscape.

(1) Objective

- Promote conservation of medicinal plants and dissemination of knowledge among community to enhance resilience.
- Revitalise knowledge on medicinal plants local health tradition for community well-being.
- Utilise medicinal plant nursery for learnings on cultivation, conservation, and promotion.

(2) Description of Activities

(a) Identification of Traditional Healers

Traditional healers, widely known as Bhagat/Vaidya, shall be identified in potential FMUs using local sources such as forest field staff, NGOs, JFMC members, and other key informants. An inventory of healers will be developed in a prescribed format which will include the name of the healer, age/sex, village, block, and range.

(b) Documentation of Traditional Knowledge

Documentation of medicinal plants will be conducted involving traditional healers identified within an FMU. Documentation will include preparation of inventory with name (local and scientific name), types of plants (herbs, shrubs, grass, tree, climber etc.), parts collected and use, and name of ailments treated, season/month of collection, method of medicine preparation and administration, and doses.

(c) Awareness of Traditional Healers cum Exposure to Nearest Medicinal Nursery

Exposure visits for the group of traditional healers will be organised to get them informed about the availability of medicinal plants in nurseries, which can be collected by healers free of cost to prepare medicine and sell to the public or distribute free of cost. The exposure will also help in two ways in learning about medicinal plant, exchange of knowledge between healers, and project officials.

(d) Dissemination of Knowledge Among Common Public/ JFMC Members in Selected FMU

Traditional healers will be supported with logistics to create awareness programme on health benefits of medicinal plants along with the health camps at different locations in JFMC areas.

1) Implementation Structure

FMU will work with traditional healers and necessary support will be provided by extension workers.

2) Implementation Schedule

Table 3.14 Implementation Schedule of Activity 3.1.3 and 3.2.3 Support for Community Well Being

Landscapes	Name of Activity	Schedule
Hills and North Bengal	Identification, selection, and exposure, of healers and documentation of medicinal plants	Batch I 4/ 2024 – 3/2026
		Batch II 4/2025- 3/2027
		Batch III 4/2026- 3/2028
Dry Lateritic and Alluvial		Batch I 4/2024-3/2026
		Batch II 4/2025-3/2027
		Batch III 4/2026- 3/2028

Landscapes	Name of Activity	Schedule
Deltaic	-	-

Source: JICA Survey Team

3) Budget:

INR 60,000 per FMU

3.9 Activity 3.1.4, 3.2.4, and 3.3.4 Support for Community Mobilising (Extension Workers)

JFMC and other village level institution needs to be mobilised for planning and implementation of the project activity at JFMC level. For this purpose, extension workers will be deployed in all three landscapes.

(1) Objective

Select and engage qualified staff through NGOs for community level mobilisation, interventions, and regular support to JFMCs.

(2) Description of Activities

After deployment in FMUs, extension workers will be selected. The indicative selection criteria is given in Attachment 2 and TOR is given in Attachment 8.8.4. Once they are engaged, they will work closely with FMU to guide JFMCs. One extension coordinator will be engaged to cover five JFMCs.

(3) Implementation Structure

- DMU will select and deploy extension workers to be placed at each FMU.
- Extension worker will provide support on a daily basis to JFMCs under the particular FMU.

(4) Implementation Methodology

- PMU will develop guidelines for recruitment of extension workers.
- DMU will advertise the posts in local newspaper and DMU website. Applications will be evaluated by a committee constituted by DMU.

(5) Deployment Benchmarks and Deployment Schedule of Extension Workers

Table 3.15 Schedule of Recruitment and Duration of Engagement for Extension Workers

Landscapes	Benchmarks of Recruitment	Duration of Engagement
Hills and North Bengal	By the end of March 2024	FY 2024 – FY 2026
Dry Lateritic and Alluvial	By the end of March 2025	FY 2025 – FY 2027
Deltaic	By the end of March 2026	FY 2026 – FY 2028

Source: JICA Survey Team

4. Component 4: Institutional Strengthening

4.1 Component Objectives

Component 4 is designed to support project implementation through strengthening of the capacity of implementing units at all levels and stakeholders as required. Activities required for monitoring and evaluation (M&E) of the project implementation are also included in this component.

4.2 Sub-Component 4.1: Strengthening Project Management

(1) Activity 4.1.1 Capacity Development on MIS/ DX

(a) Objectives and Outline of the Activities

In order to facilitate efficient monitoring of the project implementation by PMU, which would also contribute to on-going efforts of WBFD towards DX, four activities are proposed along with the trainings required for implementation of the activities, to address the issues/ challenges described in Section 8.1.5 (3) Outline of the proposed activities is shown in the following table.

Table 4.1 Outline of the Proposed Activities of MIS/DX

No.	Budget Head Item	Activities	Indicative Quantity	Implementing Unit
Activity 4.1.1.1	4.1 Strengthening Project Management	Digitisation of JFMC boundary within the project target area, except the areas whose boundary GIS data was already developed.	600 JFMCs	Section of working plan and GIS lab, WBFD and field officers: GIS and filed work PMU: Procurement of materials
Activity 4.1.1.2	4.3.1 Progress Monitoring 4)	Development of web-GIS platform of WBFD.	1	PMU in coordination with vendor and working plan and GIS lab of WBFD.
Activity 4.1.1.3	4.3.1 Progress Monitoring 4)	Upgrade of mobile application (e-monitoring) to add function of e-plantation journal.	1	PMU in coordination with a vendor.
Activity 4.1.1.4	4.3.1 Progress Monitoring 4)	Development of project MIS platform linked to web-GIS.	1	PMU
Activity 4.1.1.5	4.3.1 Progress Monitoring 4)	Training of field officers (range/ beat officers) in the target area on the operation of GPS and mobile application.	1/range in the target area	Trainer: PMC Trainee: Range and beat officers
Activity 4.1.1.6	4.3.1 Progress Monitoring 4)	Training of DMUs/FMUs on the operation of MIS and mobile application	1/DMU	Trainer: PMC Trainee: DMUs, FMUs
Activity 4.1.1.7	Site Verification			
i)	4.1 Strengthening Project Management	On-site verification of JFMC boundary digitisation.	60 JFMC (10% of the total target JFMCs)	JFMC/ FMU/ DMU/ PMU

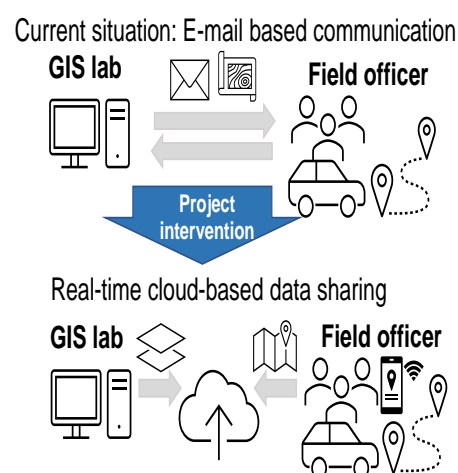
No.	Budget Head Item	Activities	Indicative Quantity	Implementing Unit
II)	4.1 Strengthening Project Management	Inspection of plantation work.	500 ha (more than 10% of the total plantation area)	
iii)	4.1 Strengthening Project Management	Boundary pillar setting	Boundary pillars will be set around the JFMC forest boundaries	
Activity 4.1.1.8		Pilot project for use of UAV for development of technical guidelines	1 unit of UAV	PMU/ PMC/ DMU/ FMU

Source: JICA Survey Team

(b) Implementation Method

1) Activity 4.1.1.1 Digitisation of JFMC boundary

The principal method of digitisation shall follow the Standard Operation Procedure (SOP) prepared by WBFD shown in Attachment 8.9.1 and summarised in Figure 8.1.3. In WB-FBCCCR, as illustrated in Figure 4.1 Image of the Project Intervention Figure 4.1, efficiency in site verification and coordination between the field officer and GIS lab will be enhanced through DX, namely, introduction of web-GIS and mobile map application synchronised with GPS and strengthening of the capacity of field staff. The expected coordination after project intervention is shown in Figure 4.2. The expected roles of the stakeholders are summarised in the table below.



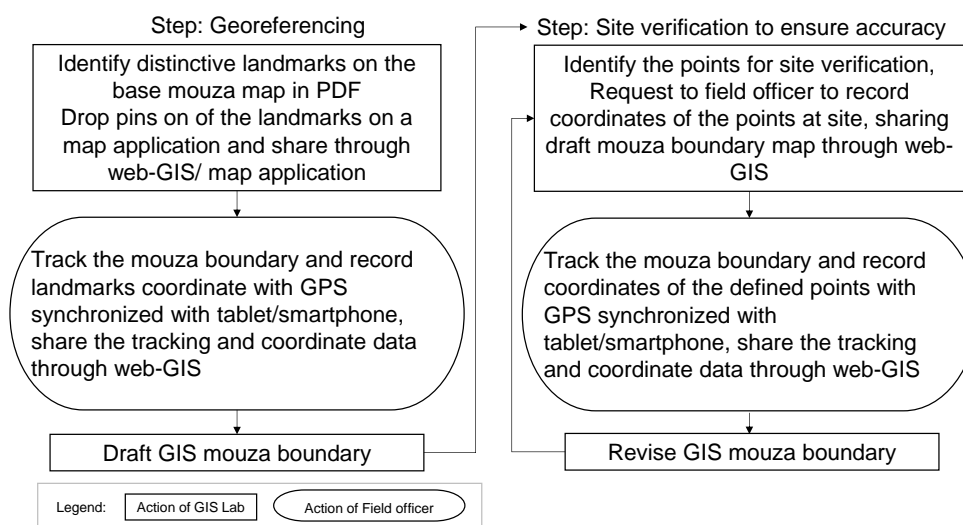
Source: JICA Survey Team

Figure 4.1 Image of the Project Intervention

Table 4.2 Roles of the Stakeholders in Digitisation

Stakeholders	Roles
PMU	Procure necessary inputs (materials, equipment, consultant) for the activity. Coordinate with the section working plan and GIS and DMUs for planning and implementation. Monitor the entire progress.
PMC	Assist PMU coordinate with the stakeholders and monitor the progress. Prepare work plan and schedule of the activity in coordination with GIS lab. Provide training to the field officers on usage of the application introduced.
CF Working Plan and GIS	Supervise the work for this activity by GIS lab.
GIS lab	Develop GIS mouza boundary data. Coordinate with field officers for site verification.
FMUs/WBFD field officers	Based on the guidance from GIS lab, execute site verification and report the result to GIS lab. Coordinate with the local stakeholders such as villagers/ gram panchayat, etc., for site verification.

Source: JICA Survey Team



Source: JICA Survey Team

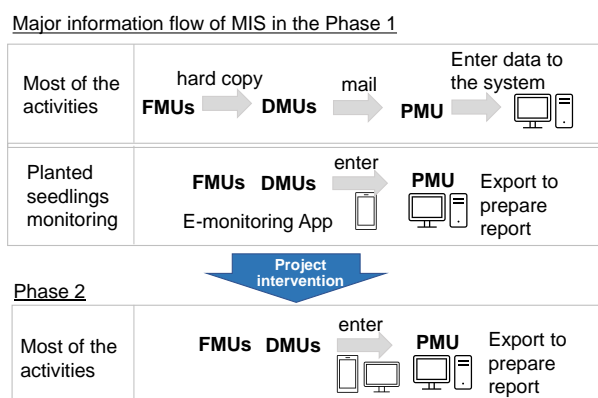
Figure 44.2 Outline of the Coordination between GIS Lab and Field Officer for Mouza Map Digitization after Project Intervention

The tentative target area covers 14 divisions of eight districts, WB-FBCCCR target area, excluding the districts where mouza boundary, was already digitised. The target number of mouza for boundary digitisation will be defined after the target area for the other scope of the Project are finalised.

2) Activity 4.1.1.2, Activity 4.1.1.3, Activity 4.1.1.4: Development of web platforms and application for MIS

For the project MIS, possible interventions are installation of web-GIS, upgrade of application and establish a project which is an MIS linked with the web-GIS and application, to enable PMU to supervise various activities in the field in a timely and efficient manner (Figure 4.3).

The details of the functions of each web platform and application for MIS will be defined within the first six months, and procurement of the vendor is completed in the first year of WB-FBCCCR in coordination with the related sections of WBFD.



Source: JICA Survey Team

Figure 3.3 Expected Change in the Flow of Information of MIS

Table 4.3 Roles of the Stakeholders in Development of Web Platforms and Application for MIS

Stakeholders	Roles
PMU	Procure necessary inputs for the activity. Define the functions and design of each web platform. Coordinate with the relevant sections of WBFD, DMUs, vendors for planning and implementation. Monitor the entire progress.
DMU/FMU	In the development stage, participate in the trial use to improve user interface. In the operation stage, operate the developed platforms by data entry, etc.
PMC	Assist PMU coordinate with the stakeholders, and monitor the progress. Prepare work plan and schedule, draft the scope of work of vendor and propose a framework of the web platforms/ applications. Provide users training with the vendors.
Section of MIS and e-government	Advise in selection of the vendors, design of MIS. Undertake minor maintenance of web platforms.
Section of working plan and GIS	Advise in selection of the vendors, design of web-GIS platform. Upload existing GIS data to web-GIS. Undertake operation of web-GIS after completion of WB-FBCCCR.
Vendors	Undertake development of web-platforms, upgrade mobile application following the instruction of PMU. Prepare manuals for users and administrators and provide trainings.

Source: JICA Survey Team

3) Activity 4.1.1.5 & Activity 4.1.1.6: Trainings

The trainings are provided by PMC in charge of MIS to the field officers on site before starting the field verification activity.

4) Activity 4.1.1.7: Site Verification-Digital and Ground Truthing followed by Boundary Setting

Under this activity, i) on-site verification of JFMC boundary ditation; ii) inspection of plantation work and iii) boundary pillar setting will be undertaken. This activity will be undertaken by FMU and JFMC under the guidance of DMU.

5) Activity 4.1.1.8: Pilot Project for Use of UAV for Development of Technical Guidelines

This pilot project will intend to develop a method for effective application of UAV for monitoring of the plantation works. So far in WBFD, UAV is mostly used in the wildlife divisions and its application in forestry operation has been limited. Thus, the project will invest in developing a standardised protocol of utilisation of UAV in forest operation monitoring including JFM forests. The pilot project design shall be developed by PMU jointly with PMC. The field level pilot activities can be undertaken in the selected DMU/ FMUs in the project, which shall be selected from different landscape. Once the pilot project is undertaken, the findings shall be evaluated and synthesised as a technical guideline by PMU and PMC and participating DMU. PMU/ PMC shall organise a technical workshop with DMUs to share the pilot project findings and technical guidelines.

(c) Tentative Specification of Hardware and Quantities and Procurement

In order to implement the proposed activities, procurement of hardware and software are required as shown in the following table. Necessary budget is allotted under the budget head of Activity 4.3.1.4.

Table 4.5 Tentative Specification of MIS/ DX System and Quantities

Activities	Items/ Procurement Method	Indicative Quantity
i) Digitisation of JFMC boundary	Mouza sheet (official boundary map in hard copy)/ direct purchase from Land department.	Average 10 sheets/mouza
	GPS/ direct purchase from a vendor.	1/district
ii) Development of web-GIS	Renewal of GIS software/ direct purchase from a vendor.	5
	Web-GIS platform / develop by an outsourcing vendor.	1
iii) Upgrade of mobile application	Upgraded mobile application/ develop by an outsourcing vendor.	1
iv) Development of project MIS platform linked to web-GIS	Web MIS platform/develop by an outsourcing vendor.	1
	Tablet for data entry by DMU.	1/ territorial DMU
i) UAV	To be defined in Pilot Project Design	1

Source: JICA Survey Team

(2) Activity 4.1.2: Mobility

The project will support mobility of the project implementation unit at all levels. Cars, motorcycles, truck, and speed boats are proposed to be procured under the project. Since the procurement is time consuming and delays the implementation of project activities, PMU may opt for hiring the vehicles.

Table 4.6 Mobility for Strengthening Field Operation

SI	Items	Indicative Quantity	Purpose	Procurement Method
1	Cars	30	For field mobility by PMU and FMUs	State Procurement Rules/ Government e Market Place
2	Motorcycles	85	For field mobility by FMUs	State Procurement Rules/ Government e Market Place
3	Truck (LPT407)	4	For Wildlife Rescue and transportation	State Procurement Rules/ Government e Market Place
4	Speed Boats for Sundarbans	7	For surveillance and monitoring poaching/ thefts	State Procurement Rules/ JICA Guidelines

Source: JICA Survey Team

(3) Activity 4.1.3: Buildings

The project will make investments in buildings, which provide space for project officers and staffs to work productively. The table below provides the proposed buildings under the project.

Table 4.7 New Building for Strengthening Project Operation

SI	Items	Indicative Quantity	Purpose	Remarks
1	PMU building (floor area 5000 sq. ft x 3 (Ground + 7 levels))	1	For project operations at state level	At Salt Lake; the land is available with WBFD
2	CCF Offices (Durgapur) (floor area 5000 sq. ft x 3)	1	To support and supervise project operations in field	State Procurement Rules/ Government e-Market Place
3	Range Office Complex (floor area 1,200 sq. ft.)	25	To implement project activities in target areas/ JFMCs	Ranges falling under the identified Project Divisions/ DMUs

Source: JICA Survey Team

(4) Activity 4.1.4: Project Contractual Staff

PMU will hire the professionals from the open market either directly or through outsourcing to extend support and assist project operations at PMU, DMUs, FMUs and JFMC level. These project staff will be in addition to the project staff that will be deployed by WBFD on deputation to PMU, and notify the field units, viz., offices of CCF, CF, DFO, and Ranges to work on the project in addition to the regular departmental functions. The type of staff to be hired on contract includes – technical experts/ professionals, office assistants, multi-utility persons, computer operators, drivers, security persons, etc. The following table depicts the requirements at various levels of project operations.

Table 4.8 Contractual Staff to Assist the Project Operations at State and Field Level

Items	No of Contractual Positions per Unit	Total No of Contractual Staff	Remarks
PMU	8	21	1 PMU (21 persons for 8 positions.)
DMU	4	120	30 DMUs; Utilising project funds position of Accountant will be for 12 DMUs, and Office Assistant and Computer Operators for 15 DMUs; In the remaining DMUs, state share will be utilised.
FMU	3	255	90 FMUs (Supports are required for 85 FMUs only.)
JFMC (Extension Worker)	1	120	600 JFMCs/ 1 person per 5 JFMCs

Source: JICA Survey Team

(5) Activity 4.1.5 Digital Strengthening

Under the project, web enabled GIS linked with MIS will be developed. This will enable the field level staffs at DMUs and FMUs to directly upload the monitoring data to the system. In addition, UAV will also be tried out to enhance efficiency in field level data collection. Further, interactions and transactions between the field and state level offices are increasingly digitised, which process was accelerated after COVID-19. To create an enabling environment for the project to benefit most from the introduced established digital system, appropriate tools and equipment are to be adequately provided for the field level use. The fund budgeted under this activity shall be utilised by the project to procure the digital

tools and accessories based on the requirement at DMU and FMU in order to fully exploit the benefit of the digital infrastructure of the project.

4.3 Sub-component 4.2: Capacity Development

(1) Activity 4.2.1: Training Plan based on Training Needs Assessment (TNA)

TNA will be conducted by PMU/ PMC to prepare a training master plan, which is the long-term plan for the entire project. Based on the Training Master Plan, an annual training plan will be prepared by the concerned officer in PMU.

(2) Activity 4.2.2 Trainings of Forest Officers (DCF and above ranks) and Activity 4.2.3 Training of Forest Officers/ Frontline Staff (Ranger and below ranks)

Training activities will be planned in three levels. The training objectives are as follows: 1) to train the project officers and staffs for project management; 2) to provide specialised training programmes for the skills that are newly introduced by the project.

These training activities can be undertaken by engaging resource persons/ trainers or by engaging resource organisation with required expertise.

Under the 1st training objective, log frame based project management, M&E, financial management, gender mainstreaming, social and environmental consideration, etc., will be dealt with. Under the 2nd training objective, technical training for short duration will be organised. As for the specialised training, indicative training outlines are provided in Attachment 8.9.2., which can be revisited in reference to the results of TNA which will be conducted at the initial stage of the project. Lastly, study visits are also to be conducted for certain topics. Study visits are currently budgeted based on the batch sizes and duration. The detailed plan shall be developed by PMU with support of PMC. The indicative outline of the study trips is shown below.

Table 4.9 Indicative Batches and Duration of the Study Trips

Level of Trainees	Type of Training	Batches	Duration
DCF and above	Specialized Trainings	20 (20 persons per batch)	1 week
	Exposure Trips	10 (12 persons per batch)	1 week
	Overseas Training	3 batches (12 persons per batch)	2 weeks
Ranger and below	Specialized Trainings	30 (20 persons per batch)	7-15 days
	Exposure Trips	10 (20 persons per batch)	10 days
	Overseas Training	5 batches (15 persons per batch)	2 weeks

Source: JICA Survey Team

(3) Activity 4.2.4: National Workshop

JICA Forestry Sector projects in India organise a national workshop once a year. Each state will take turns to organise the workshop. Thus, the project will also organise one workshop during the project duration. The cost of a three-day workshop with 70 participants has been budgeted for this purpose. In consultation with JICA, a one-time national annual workshop will be organised by the PMU during project implementation, inviting key stakeholders from JICA that supported forestry-sector projects in India along with key project staff, representatives of the State/ Government of India (GOI), other externally-aided project, donor agencies, NGOs, etc. The National Workshop could be planned after the fourth year of project implementation.

(4) Activity 4.2.5: Trainings for JFMC/ SHG Members

JFMC/ SHG members taking part in the project activity will need to be trained in group management, microplanning, monitoring, financial record keeping and management. As for SHG members who will be supported for SHGs, they will be trained in business planning and development in addition to the specific skills required for the enterprise. For those SHGs engaged in NTFP harvesting, training on sustainable harvesting technology may be provided. Further details on the training topics are provided in **Attachment 8.9.2 (b)**.

4.4 Sub-Component 4.3: Monitoring and Evaluation

(1) Overall M&E Arrangements

PMU will regularly monitor and keep record of the physical and financial inputs and outputs of project activities. To facilitate this, following the agreed institutional arrangements for the project, PMU will deploy a full-time senior forest officer with relevant experience and skills in monitoring and evaluation, and has also acquired the required skills and recruit IT professionals having experience in MIS and GIS systems. The officer will be in the rank of Conservator Forests (CF), and will head the M&E Unit within PMU. Sh/e will be in-charge of overall landscape-based monitoring and evaluation, and will work full-time in the PMU. PMU would procure all relevant resources and would also strengthen existing GIS units of WBFD for the project purpose. During project implementation, the main responsibility to manage and analyse data would be with IT/GIS Cell of the Forest Department, and such data would be utilised for generating various project reports/ maps.

PMU will coordinate with all institutions according to the project's institutional arrangements, in monitoring the activities on a day-to-day basis. Following M&E guidelines, circles will further supervise and coordinate with the divisions, and Resource Organisations/ NGOs will keep track of the project implementation. The Extension Worker at the village level along with JFM and Livelihood Coordinators at the range level will be involved for monitoring and reporting activities at the village level. The representatives from various community institutions (e.g., JFMCs and SHGs) will be trained to use simple tools to monitor project progress and impacts, and discuss its implications as well. All key stakeholders at various project implementation levels will be oriented and tracking project progress following landscape-based monitoring approach.

PMU will work to modify existing web-enabled MIS, and would tailor the software to meet the requirements of the project including developing templates for the three-landscape based monitoring. The modified MIS will be utilised to consolidate and manage primary data reported by various implementing units or received from various other agencies. The project progress information will also be analysed, and Quarterly Progress Reports (QPR) will include information aggregated for the three landscapes.

MIS software should have a feature to integrate data with GIS platform for undertaking spatial analysis. Data from MIS will be used to update the operation and effect indicators of the project to input into monthly, quarterly, and annual progress reports. Mobile application of MIS will also be developed. Use of GIS and other modern information tools will help collate, compare, analyse, and visualise the information.

As per the requirements under society function, if required, PMU will also adopt standard accounting software for fund management and project accounting, and will customise the accounting software for generating statement of expenditures at all operational levels, viz., PMU and forest divisions/ ranges.

For financial management, the accounting software will be utilised for preparing reimbursement claims efficiently and on a timely manner. Such feature will optimise the time taken for reconciliation of financial data as well as minimise errors in reporting. The accounts staff at all levels also need to be well oriented and trained on managing society accounts, and properly responding to the statutory

requirements under goods and service tax as well as income tax, and other associated taxes as applicable. For getting exemption on the income, the society also needs to get registered under applicable section, and accordingly file returns.

For monitoring of prescribed social and environmental protocols and safeguards, a person in-charge for M&E at PMU will coordinate and regularly update the status. The PMU will receive information and feedback from the respective heads at circle, division, and range, who in addition to the main responsibilities as defined under roles and responsibilities given in the institutional arrangements, will be responsible to monitor the social and environmental protocols.

Specialists in PMC Team will assist to review the existing M&E framework for the project as well as help PMU in establishing a landscape-based M&E system and MIS/ GIS applications for the project. PMC will also assist PMU in developing measurable indicators (both operation and effect) based on logical framework and protocols including preparing M&E guidelines and reporting formats for the project, and help in modifying/ redesigning computerised MIS/ GIS facilities for different components of the project.

(2) Reporting Requirement

PMU will prepare quarterly reports on prescribed reporting structure, and timely furnish to JICA to apprise on the project implementation progress. PMU will also publish an annual report along with the updated project implementation schedule after getting approval from the Governing Body/ HPC at the completion of each fiscal year. The reports will be available both in print forms as well as in digital form, and will also be shared by way of publications and project website to facilitate further information dissemination.

PMU will develop templates for quarterly and annual reporting during the first year of project operation. If required, the reporting templates will be shared to obtain concurrence from JICA. These reports will include: (a) landscapes segregated physical progress and financial expenditure by components/ sub-components against annual plan along with analysis, maps, photographs and graphs to support claimed achievements; (b) landscapes segregated project operation and effect indicators; (c) landscapes segregated problems/ constraints encountered during the reporting period, with suggested remedial actions, (d) landscapes segregated observation and recommendations of PMC and; (e) updated status on social and environmental safeguard requirements of the Project.

The Annual Plan of Operation (APO) will be prepared for each fiscal year. PMU will get APO approved from GB and HPC, preferably by March, for each financial year, and will share with JICA for information. PMU will also establish a system of preparing need-based annual plans involving key stakeholders and will provide all necessary guidance and support, and conduct regular follow-up with stakeholders to get APO compiled and get its approval on time. Since preparing need-based annual plans will require that the current capacities of the project staff and institutions at each operational level to be strengthened. Thus, PMU will ensure to provide necessary training to all key stakeholders for that purpose. The following table provides key reporting requirement for the project.

Table 4.10 Reporting Requirement at Various Levels

Sl. No.	Type of Report	Responsibility to Generate Report	Submission Level	Circulation / User	Remarks/ Likely Contents
	Annual Report	PMU	GB	HPC, State Government, MOEF&CC/GOI, JICA, WBFD	Landscapes segregated Achievement (physical and finance) and

Sl. No.	Type of Report	Responsibility to Generate Report	Submission Level	Circulation / User	Remarks/ Likely Contents
					<p>status against the annual plan, and reasons for shortfalls, if any.</p> <p>Landscapes segregated Operation and Effect indicators, updated social and environment safeguards.</p> <p>Successful cases and innovations.</p> <p>Inter-sectoral convergence efforts.</p> <p>Lessons learnt and way forward.</p> <p>Maps, photographs, graphs, etc.</p> <p>(To be published and uploaded on website and kept in public domain)</p>
	Quarterly Report	PMU	JICA	GB, Executive Committee (EC), JICA, State Government (EAP)	<p>Landscapes segregated Achievement (physical and finance) and status against the annual plan on prescribed format, and reasons for shortfall, if any.</p> <p>Inter-sectoral convergence efforts.</p> <p>Problems and constraints, and corrective</p>

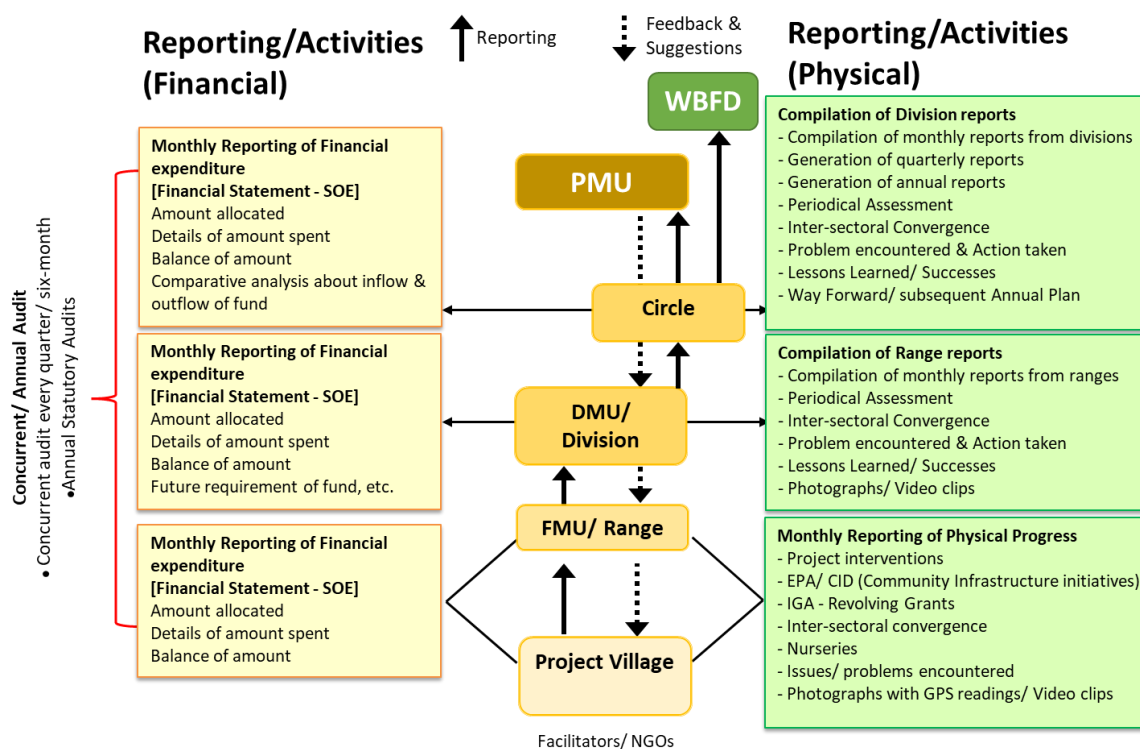
Sl. No.	Type of Report	Responsibility to Generate Report	Submission Level	Circulation / User	Remarks/ Likely Contents
					actions/ measures taken. Photographs, graphs, etc.
	Statement of Expenditure (SOE)	PMU	JICA	JICA/ CAAA, MOEF&CC/ GOI, DEA, State Govt. (EAP)	Reimbursement claims based on financial reporting and consolidated expenses against the annual plan. SOE to be prepared based on the entries made in the accounting software.
	Annual Plan of Operation (APO)	PMU	HPC	PMU, project circles, divisions/ ranges, District Administration ; WBFD	Planning activities as per Implementation Plan (IP). Plan for backlog/ delayed activities, and strategy. Component-wise and activity-wise fund requirement/ budget allocation.
	Statutory Audit Report	PMU	GB	JICA/ WBFD	Confirming SOEs and eligible portions. Annual Audit Report on standard/ prescribed format.
	Back-to-Office Report (BTOR)	PMU officials/ PMC Experts	CPD/ PMU	All concerns	Observations from field visits on the project implementation progress vis-

Sl. No.	Type of Report	Responsibility to Generate Report	Submission Level	Circulation / User	Remarks/ Likely Contents
					à-vis annual plan, identifying the issues/ areas of concern, status on action points, etc.

Source: JICA Survey Team

(3) Flow of Information

For continuous tracking of project implementation, information and communication system needs to be in place with clear roles and responsibilities, including frequency of data compilation and reporting. It is expected that from divisional level onwards, the information would flow electronically. Range offices will be responsible for information compilation as per the frequency of reporting and transmit to division, and from there the consolidated information would get transmitted to PMU with a copy to be provided to the Circle Offices. The Circle Offices will review the reports, and communicate their observations to PMU with a copy to the superiors in WBFD. Paper-based reporting or if possible, mobile based applications could be adopted for capturing information at the village level. Data compilation and reporting of activities will be facilitated by project/ forest staff and resource organisations/ NGOs. PMU will ensure connectivity and requisite infrastructure/ equipment during the preparatory phase of the project. The information from the lowest operational level to the PMU will be utilised to generate various reports and publications. Figure 8.9.4 below illustrates the flow of information and use at different level of operations.



Source: JICA Survey Team

Figure 4.4 Information Flow and Reporting Arrangement for the Project

To make information generation and reporting efficient, PMU will create systems to address information needs of sectoral heads within WBFD as well as for external sharing with other agencies and state/ central governments. Discipline in accessing information from the lower levels will be established to avoid multiple channels for seeking information that may otherwise burden divisions and functionaries below to respond to day-to-day information needs of various sectoral heads at the headquarter/ PMU. For issuance of project guidelines and instructions, the Chief Project Director will carry the authority to communicate with the Circles/ Divisions, and will also keep the departmental sectoral heads in loop, and thus, can avoid multiple channels for providing guidance on the project implementation.

(4) M&E System for the Project

Following M&E system, activities for tracking landscape-based project progress and performance will be systematically carried out during the project implementation. M&E system will enable the project to take remedial actions based on lessons learnt. M&E system for the project will have the following key elements grouped into a) Monitoring, b) Impact Assessment, and c) Audits and Transparency, and d) Operation and Effect Indicators. PMU will ensure to put the system in place during the preparatory phase of the project and develop M&E guidelines and manual with the help from PMC. PMU will also take necessary steps to build capacities of the project staff at all levels of operations, particularly on landscape-based M&E aspects.

(a) Activity 4.3.1: Progress Monitoring

1) Activity 4.3.1.1: Biodiversity Monitoring

Monitoring ecosystems/ biodiversity may not be the same as directly measuring key results. Measuring biological indicators provides a snapshot of biodiversity at the time of measurement, and such system of monitoring is a continuous process which allow managers to identify changes and trends over time so that they can assess whether interventions are achieving biodiversity goals and adapt management accordingly. It would be a good approach for a short duration project to focus on monitoring trends rather than measuring absolute values. Thus, the project will undertake a comprehensive biodiversity baseline survey in the three landscapes engaging a qualified and credible institution/ agency during the preparatory phase of the project.

Most threats to biodiversity result from human activities which, in turn, depend on social and economic factors. Monitoring of socioeconomic factors, therefore, is an important part of biodiversity monitoring. Similarly, a range of institutional factors can impact on biodiversity health and the effectiveness of landscape management, and should also be monitored.

Thus, a meaningful and operationally relevant monitoring system will encompass a broad range of subjects to be monitored, including landscape or species dynamics, socioeconomic factors, community involvement and institutional and regulatory factors. It will also be important to define the spatial and temporal scales of monitoring activities, as landscape management deals with ecological processes which are generally long-term changes (e.g., changes in population of a key species) resulting from management interventions that may be slow to emerge, sometimes beyond the project timeframe. Adequate equipment and human resources also need to be arranged to execute the landscape monitoring plan.

The methods to be developed for monitoring purposes should aim for ensuring that no major change in landscapes and protected areas can go undetected. Under the project, establishing Long-term Ecological Monitoring (LTEM) permanent plots could serve as an indicator for measuring changes in the biodiversity over a period. Measurements aids like data loggers, cameras, automated weather stations (AWS), UAV/ drone, and satellite data could be utilised for the purpose of data recording and analysis. The methods should have scope for involving local people, equipment, and funds. In addition, the

methods should be backed up by satellite-based monitoring of land use on a regular basis as well as in-depth monitoring of selected habitats and species. This exercise would be undertaken once every two years from project initiation.

Monitoring of landscapes should be able to answer questions such as: a) the extent of improvement or degradation of habitats and ecosystems; b) the changes in the populations of threatened species of plants (particularly RET) and animals; c) the causes of changes; d) effectiveness of the management interventions; and e) the changes in the benefits shared with the local communities derived from the improved forest ecosystem services. In other words, monitoring should be able to answer if the management interventions in the area are effective in addressing landscape conservation.

2) Activity 4.3.1.2: Concurrent Monitoring and Periodic Reviews

For the project components, concurrent monitoring would be the key approach to bring in transparency and efficiently track the project implementation. The monitoring will be undertaken following multiple approaches – field visits, periodic reviews, reporting, assessments, and feedback, etc. Regular monitoring will be an in-house routine affair. Standard checklist, semi-structured questionnaire, and set of indicators will be developed by the PMU with assistance from PMC for undertaking concurrent monitoring. If required, monitoring could also be undertaken by hiring independent credible monitoring agency from time-to-time. The planned activities will be monitored against the approved APO. A set of Operation and Effect indicators will be identified and necessarily be updated on an annual basis by PMU.

PMU will create a system for undertaking field visits by PMU officials at regular intervals, and feedback on project management by way of structured ‘Back-to-Office Reports’. IT/ GIS Cell will be made responsible to facilitate generation of analytical maps and reports based on the data captured through various GIS/MIS modules at different levels of project implementation. The analytical reports will be utilised by PMU as well as sectoral heads in WBFD for identifying critical gaps, and such issues will be transmitted by the Chief Project Director (CPD) along with action points to all the divisions through Circle offices at a regular interval.

Periodic reviews will be undertaken at all levels of project operations. The key institutions that will be responsible for periodic reviews are: Circles, PMU, and stakeholders/ agencies that will be interested in keeping regular track of the project implementation and performance, e.g., state/ central government, JICA. As part of the periodic review, a system will be instituted to report and review the project progress by the three landscapes. Site verification in each landscape shall also be done by the officer in charge of landscape monitoring at PMU. This will with the , and The following would be the frequency of monitoring and review by various stakeholders/ agencies:

Table 4.11 Frequency of Monitoring and Review Meetings

Frequency of Monitoring and Reviews	Stakeholders/ Agency
Monthly	Project Circle
Quarterly	PMU/ Executive Committee
Semi-Annually	GB
Annually	HPC members, JICA representatives

3) Activity 4.3.1.3: Community Self-monitoring

System of self-monitoring by community institutions based on the annual implementation plans will be in place at JFMC level. JFMC office bearers and members will be facilitated and guided to fine-tune and adopt simple participatory tools for generating performance reports based on actual achievements.

PMU will ensure to implement a colour-code-based performance rating system for the project JFMCs. Based on the rating system, a Quarterly Performance Report Card will be prepared for each JFMC, and will be displayed at the Range level. A caution is required that such a system should get evolved by the community themselves rather than project-driven.

4) Activity 4.3.1.4: Computerised MIS & GIS/ applications/ UAV for monitoring

- **MIS and Reporting System**

MIS will be utilised for capturing the progress and achievements on a day-to-day basis. MIS will be planned until range-level from where the data will get integrated upwards. This would be done in phased manner. Paper-based formats or mobile based application system could be used to capture information initially. The output reports generated by the MIS will give status of project progress and performance.

Existing MIS software will be modified by WBFD/ PMU for the purpose of the project within the first year of project initiation. In-house capacities of WBFD or services of qualified agency will be utilised to design or modify MIS modules as per the project requirements considering the project logical framework and proposed M&E system.

PMC will also guide PMU to strengthen progress reporting. IT/ GIS cell within WBFD will also have the mandate to provide technical backstopping to project divisions and ranges during the project implementation. A training manual will be developed for the project-specific MIS modules prior to commissioning, and will be utilised to train the project staff at all levels of operation.

- **Technology based Monitoring - GIS Applications**

Through the project, the IT/ GIS cell will be further strengthened for undertaking GIS/ MIS operations. All the project sites and treatment areas will be geo-coded and plotted on digitised maps. Such maps will be further utilised for planning and analysis. It will also be important to record geographical location (GPS based coordinates) of each individual asset created under the project for closely monitoring the work progress. Location-specific inventory of assets with geo-codes will be created and photographs taken on the timeline will be tagged to better manage the assets in future.

In addition, IT/ GIS Cell will also be capacitated of undertaking technology-based analysis utilising UAV, and related assessments utilising both MIS and GIS tools.

5) Activity 4.3.1.5: Computerised Accounting System

Computerised accounting system based on standard accounting software will be utilised for maintaining financial records until range-level for real-time reporting. The accounting software would be customised and adopted for financial management, tracking disbursement as per annual plans and efficiently compiling Statement of Expenditures (SOEs) for submission to JICA, state government, and Central Aids, Accounts and Audit Division (CAAA) under the Ministry of Finance, Department of Economic Affairs.

The accounting software would be procured for newly created project offices; whereas, the software already available with the forest divisions, will be utilised for the project after customisation.

All operational levels would be strengthened both in terms of equipment/ connectivity and human-resource to implement the plans. Systematic training would be planned for all key staff at all levels to handle and utilise this software for maintaining financial records and generating reports including landscape segregated financial progress reports.

6) Activity 4.3.1.6: Annual Strategy Planning and Review Workshops

The strategy planning and review workshops will be organised annually at Circle and State-level. At several stages during project implementation, it will be necessary to have consultations on various generic issues and areas where project may require views, collaborations, and for sharing successes as well. This event will also provide a good opportunity to PMU to listen to learning and best practice from outside experts, engage with like-minded people with shared interests, inspire and generate ideas and new thinking to form new partnerships and networks, to get results and disseminate messages face to face, to initiate action and collectively bring about change, to encourage public-relation and media coverage, and to celebrate achievements.

At Circle-level, a one-day event will be organised; whereas, at State-level, it would be a two-day event. PMU will be responsible to organise state-level annual workshop every year, and will also make follow-up with the Circles in proposing a Circle Annual Planning and Review Workshops every year. PMU will also guide Circles to prepare a structure and agenda for the workshops.

Responsibility to organise this annual event at the Circle-level will be with the CF/ CCF, and will be assisted by subordinate staff at the Circle. These events will be planned preferably during January/ February in which representatives of all key stakeholders including JFMCs, SHGs, resource organisations/NGOs, PMU, and PMC representative and divisional/ range level project and forest staff will participate. The event at the Circle-level would be chaired by the CF/ CCF.

During the Circle-level workshops, Circle heads will review the annual progress. Representatives of divisional/ range offices will make presentations on achievements vis-à-vis the annual plan. Performing community institutions will share their experiences and achievements vis-à-vis the annual implementation plan. The efforts of performing community institutions will be recognised by way of some citations/ awards system. The workshop will also discuss next year project planning, and will take inputs from participants for preparing subsequent annual plans. The Circles will prepare and submit a report on the template circulated by PMU within a reasonable timeframe soon after the completion of the event.

State-level event will be organised after the Circle-level workshops are concluded. Synthesis and learnings of the workshops will be compiled and published by PMU.

(b) Activity 4.3.2: Impact Evaluation

1) Activity 4.3.2.1: Annual Outcome Assessments

Annual Outcome Assessments (AOAs) will focus on outcomes in context of the project outputs achieved by the Project. The framework of the AOA would be developed by PMU in assistance from PMC following the logical framework of the project. AOA will also review the annual plan of operation, quarterly reports, and other reports produced during the financial year, and will include assessment on the institutional and financial performance of JFMCs, SHGs, and Project Staff as well as project divisions. This exercise would also highlight key bottlenecks and constraints where immediate remedial actions are required.

The exercise would be undertaken immediately after completion of a financial year, and will necessarily be completed during the ensuing quarter every year by DMUs. This could be an in-house exercise, and if required, eligible and credible agency could be hired by PMU for such exercise. If required, TOR and procurement details could be shared with JICA for information and feedbacks. Suitable assessment tools would be developed in consultation with the stakeholders and later fine-tuned and finalised by PMU with assistance from PMC prior to the exercise.

2) Activity 4.3.2.2: Baseline and Impact Surveys

Two set of baselines would be created prior to initiation of project interventions, viz., a) socio-economic, and b) physical (forest resource) situations of the project areas. Information from

representative target groups and project areas on identified parameters and variables will be collected by a qualified and credible agency. Based on the actual situations and after studying the field conditions, TOR for baselines and impact surveys will be developed by PMC in consultation with PMU. TOR and procurement details, if required, could be shared with JICA for information and feedback. The baselines should necessarily be completed during the preparatory phase of the project, and would capture gender segregated data and analysis as well.

Prior to initiation of the project interventions, baseline surveys will be undertaken in collaboration of the project units, to collect primary data on the key project indicators including gender, and following the methodology agreed with PMU. Randomised sampling design will be followed for selection of project sites/ areas or target groups. Baseline will also capture situations in control villages/ sites, and data will be utilised as reference for making comparisons during evaluation exercises. The baselines should get completed for all batch sites during the first two years of project initiation.

To ensure that methodologies and approach for analysing data generated out of the surveys are comparable, as far as possible, one credible and eligible agency should be identified for one type of surveys, viz., a) Socio-economic, and b) Physical to be engaged at each of the stages, viz., baseline, mid-term, and end-term. Use of GIS technologies should be considered to further strengthen the survey information. GPS coordinates of all the sample sites should also be recorded. GIS maps of selected sample survey sites should also be created, and scope for spatial analysis with associated primary survey data should also be included.

This baseline data set would be utilised for future comparisons, including making comparison amongst the three landscapes, and to know the performance and impact of the project investments. The impact surveys would be planned one at mid-point (after fourth year) and end-term (after eighth year).

3) Activity 4.3.2.3: Thematic and Short Studies

While the robust monitoring system planned under the project would be helpful to provide alerts or for flagging concerns to project management during implementation, there would however be some areas where in-depth analysis would be required to further understand the causes/ factors responsible for some situations or for getting not so satisfactory results through defined processes as envisaged. It may also happen that some project areas could be innovating and exceptionally performing well, and in-depth study would be desired to learn about the factors of success that could be utilised for further replication, adoption, and dissemination. All such areas of interest could be identified from time to time by PMU based on the reviews and feedback from the field.

Thematic/ short studies would be undertaken as and when required to understand the issues and impact of certain interventions/ processes during project implementation as well as document best practices and innovations identified in the project. These studies would be for three to four-month durations, and could be planned from second year onwards until the seventh year; one to two studies per year. TOR and procurement details should be shared with JICA for information and feedback.

4) Activity 4.3.2.4: Environmental Impact Assessment

In 1994, for the first time, the EIA Notification, under the Environmental (Protection) Act (1986), was formulated, which made the process of EIA a “statutory requirement” rather than an “administrative requirement” for a number of projects/activities that are likely to have significant environmental impacts and health implications. Thereafter, the EIA Notification has undergone several amendments, whereby, the provisions for conducting public hearings has been incorporated, and several important projects/activities have been brought into the ambit of EIA, thus requiring an “Environmental Clearance” from the MoEF&CC. The EIA Notification 2006, and subsequently the draft EIA

Notification 2020, were issued with further improvements in the EIA procedure. Further, an effort has also been made to make the EIA procedure more transparent and to provide societal vigil of projects affecting the environment through public hearing/consultation by moving the environment protection agenda into public domain. In the draft notification (2020), revised threshold criteria were introduced for different categories of projects.

In this section, the processes adopted in India and the requirement for EC is described, although as per the review of the proposed project activities, it is unlikely that the Project will require any environmental clearances. If required by law, Environmental Impact Assessment will be undertaken.

(c) Activity 4.3.3: Audits

• Statutory Audits

To institute financial discipline and controls as well as to comply with JICA requirements, audits will be undertaken on a regular basis. Statutory financial audits will be annually conducted at PMU and DMUs by engaging a qualified chartered accountant firm by PMU. As required by the state government, the annual audits of PMU could also be conducted by CAG.

• Internal Audits (Concurrent Audits)

Beside the annual Statutory Audits, PMU will also institute a system of undertaking concurrent audits annually to keep close track of funds and its utilisation, and capacitate various project offices to maintain systematic and proper records as per the JICA norms. Either, it could be carried through the in-house capacities in PMU or a qualified and credible CA firms experienced in auditing externally-aided projects can be engaged.

• Social Audits

Annual Social Audits will be conducted at the lowest level of operation, i.e., at JFMC level. FMUs will facilitate the process; whereas, JFMC office bearers will take the lead. The Social Audit could be conducted along the Annual General Meeting (AGM) of the JFMCs. This will be an opportunity where the JFMC will share the works implemented across the plan and budgets with all the members/ community. This process will ensure transparency and accountability with the key institutions.

4.5 Sub-component 4.4: Strengthening Forest Research

Research findings can be beneficial especially when the research topics emerge out of the need in the field. The project visualises that such would also be the case. Thus, a sub-component is proposed to ensure that such research needs can be met by the project. As the research topics that emerge during implementation can be catered for under this subcomponent, the indicative list of research topics and brief outlines are given in the table below. These research activities can be undertaken in collaboration with reputable research institutes in India and/or in Japan.

Table 4.12 Indicative Research Topics to be Supported under Subcomponent 4.4 Research

Indicative Research Topic	Related Project Activity	Outline/ Objective of the Research
1. Creation of Carbon Estimation Lab	Activity 4.3.1 Progress Monitoring	<p>Background: According to the Working Plan Code, 2014, details of biomass for carbon stock assessment is expected to be given based on the forest types and land use. The divisional level carbon data developed through the preparation of working plan needs to be organised at state level. Standardised framework of spatial database using modern technology is required in a cost-effective way.</p> <p>Objective: The objective of Carbon Estimate Lab is to develop spatial database of carbon stock assessment in the entire state</p>

		<p>of West Bengal with standardised framework.</p> <p>Implementation Method: In WB-FBCCCR, by using procured satellite images (Liss IV) and free high resolution/frequency images (Sentinel), vegetation maps for the entire South Bengal forest areas are expected to be created for catchment treatment. Also, as an introduction of advanced technology, estimating carbon stock using a point sampling method (360-degree camera) is proposed. The standardised framework that can be used by the WBFD will be developed as a research product.</p> <p>Implementing Unit: A Carbon Estimate Lab will be established under the Research and Development wing and will have close contact with the GIS/Working Plan Division. The lab will be engaged in the following tasks.</p> <p>Collecting growing stock/carbon stock estimation data based on resource assessment</p> <p>Modelling of biomass/carbon stock with other parameters (e.g., Basal Area Factor) in the different forest types</p> <p>Spatial assessment of carbon stock based on satellite images</p> <p>Updating the data as required based on newly available field data and satellite images</p>
<p>2.Introduction of Advanced Technology for Forest Monitoring and Biomass Estimate</p>	<p>Activity 4.3.1 Progress Monitoring</p>	<p>Assess the advanced technologies available in India for forest field work (survey/monitoring) through trial use of the technologies at the pilot scale to judge if it is worthy to apply at larger/full scale for reduction of the burden of the field work and improve efficiency of forest monitoring, and develop a plan to introduce the prioritised technology at the larger/full scale.</p> <p>The proposed workflow and expected outcomes are illustrated in the following figure.</p> <div> <pre> graph LR A[Training of PMU by PMC on the advanced technologies] --> B[Selection of the technology to try Selection of the pilot sites] B --> C[Trial at the pilot scale] C --> D[Assessment in terms of utility, accuracy, cost etc.] D --> E[Work plan to introduce the technology in WBFD] D --> F[Technology assessment report] E --> G[Work plan to introduce the prioritized technology at larger scale] </pre> </div> <p>Sample advanced technology:</p> <p>360°camera with Bitterlich plotless sampling for biomass assessment</p> <p>Required input: 360°camera (or smart phone with panorama camera), data on basal area factor of target species</p> <p>Structure from Motion (SfM) to develop 3D forest images using UAV images for biomass assessment (height, canopy area, number of trees)</p> <p>Required input: Images taken by UAV, external resource (image analysis expert) for training of PMU/DMU/WBFD, and image analysis</p>
<p>3.Developing SATOYAMA Model for</p>	<p>Activity 3.2.2 Support for</p>	<p>Development of sustainable harvesting protocol for major NTFP species</p> <p>Development of equitable value chain development</p>

Dry Lateritic and Alluvial Landscape	IGA (Dry Lateritic and Alluvial Landscape)	Analysis of implication of the agroforestry/ intercropping in forest ecosystem health (including the effect of agro forestry model)
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Source: JICA Survey Team

4.6 Sub-Component 4.5: Publicity and Publication

To share project results and success in the public domain, as well as bring in awareness on key project processes, publicity and publication activities will be taken up by PMU.

Publicity and publications would be very important for creating an awareness environment as well as for sharing knowledge and information. These elements would form the means for external communication and to make sure that outputs, results, and best practices are landscape segregated and shared outside with the stakeholders. PMU will also ensure that the publications are disseminated to all stakeholders in an effective manner.

Flexibility will be with PMU to plan and execute the activities adjusted with the project pace and requirements, and accordingly, allocations have been made. The following activities will be planned under the sub-component.

(a) Activity 4.5.1: Project Website

The project website that was developed during the earlier JICA-assisted project (ID-P223) will be modified for the project, and will be utilized by PMU to disseminate and share the project details and achievements as a process of bringing in transparency. The website will also be utilized for real time disclosure of information. The reports/ knowledge material published by the project will be available in digital form as well, and will be shared through the project website to facilitate further information dissemination. The website would serve as means to minimise use of paper, and aligning with the digital initiatives by GOI.

The website would be developed to feature the following – photographs and videos, articles and messages, GIS based interactive maps, MIS reports, advertisement and notices, banners, reports and plans, budget and expenditure statements, featured links, comments, page to communicate with the project authorities and registering grievances, FAQs, surveys, newsletters and snapshots of project progress, etc.

The administrative access for editing, uploading, and updating content on the website will be with the PMU. PMU will be responsible for the task of website design, development, and maintenance that could be outsourced to a competent agency, if required.

(b) Activity 4.5.2: Guidelines, Manuals, and Annual Reports

To facilitate the project implementation, PMU will periodically publish guidelines, manuals, and Annual Report for each financial year. PMU will also organise events and workshops for dissemination of these publications and sharing project processes and achievements with the stakeholders.

(c) Activity 4.5.3: Short Films/ Digital Documentation

Films are one of the powerful means for expression and influence. Short films/ documentaries could also be prepared during implementation to feature successes and key thematic processes of the project.

(d) Activity 4.5.4: Knowledge Material

The project will make sufficient efforts for developing knowledge material, undertaking awareness amongst the target group and stakeholders, strengthening communication, education, publicity and cost-effective means for information dissemination and wider circulation. Communication and publicity will be very important and are integral elements of the project design, as it will be very vital for creating an awareness environment as well as for sharing knowledge and information with the stakeholders for efficient implementation, and to facilitate delivery of planned results. The key strategies that will be adopted in the project are:

- 1) Information, education, and communication (IEC) methods for public awareness;
- 2) Engaging NGOs/ civil societies, private industries, and volunteers for pollution, solid waste, nature conservation including wildlife, etc.;
- 3) Engaging school children through Eco Clubs for working on nature conservation and learning; and
- 4) Creating knowledge material for mass awareness.

5. Component 5: Project Management Consultant (PMC)

PMU will be supported by a group of specialists engaged under PMC. In total, 18 person-months of international specialist and 107 person-months of national specialists for a duration of 76 calendar-months is proposed. Since the procurement of PMC requires time, PMU shall initiate the process at the earliest possible time. The proposed plan assumes PMC mobilisation in December 2023. The indicative TOR is attached as **Attachment 4**.

Attachment 8.6.1 Details of Sal Plantation in North Bengal (Sal Working Circle)

- **Description of Sal Plantation Model in North Bengal (Sal Working Circle)**

<ul style="list-style-type: none"> • Spacing 2m x 2 m, 2500 trees/ha, Pit size: 60cmx60cmx45cm • Seed dibbling of Sal, 30cm in row with 3 rows • Mixed with Sal associate species (8 line in block sal and associates alternatively) • Four associates in one block • Type of seedlings: 1.5 year old seedlings, replanting when mortality was found. • Barbed wire fencing • Three years maintenance • Application of insecticide • Cleaning 5 times/year and mulching twice/year in the first year • Fireline 3m wide, watch and ward

Source: WBFD

- **Species and Spacing of Sal Plantation in North Bengal**

Line	Species and spacing
1st line - 8th Sal line	Each line shall have 3 rows 15cm apart. In each row, Sal seed is to be sown. In the middle row, one year old Sal seedling is to be planted at 2m spacing as insurance crop.
9th Line - 16th line	Sal associates Lahasune, Sidha, Kanchan, Sonalu, etc. to be planted in alternate strip of 13.5m long.
17th - 24th Sal line	Same as 1 st line
25th - 32nd line	Lali, Pakasaj, Bahera/Amloki, Totola etc. to be planted in alternate strip of 13.5m long.
33rd - 40th Sal line	Same as 1 st line
41st - 48th Line	Chilaasi, Toon, Champ and Chiloune to be planted in alternate strip of 13.5 m long.

Source: Tenth Working plan of Jaipalguri (2016-26)

Attachment 8.6.2 Details of Miscellaneous Plantation

• Description of Plantation Model in North Bengal

<ul style="list-style-type: none"> ▪ Spacing 2m x 2 m, 2500 trees/ha, Pit size: 60cmx60cmx 45cm ▪ Mixed with 3 associate species (4 lines each) ▪ Type of seedlings: 1.5 year old seedlings, replanting when mortality was found. ▪ Vegetative fencing ▪ 3 years maintenance ▪ Application of insecticide ▪ Cleaning 5 times/year and mulching twice/year in the first year (creation year), ▪ Cleaning 4 times/year in 1st year maintenance, 3times/year in the 2nd and 3rd year maintenance ▪ Fireline 3m wide, watch and ward

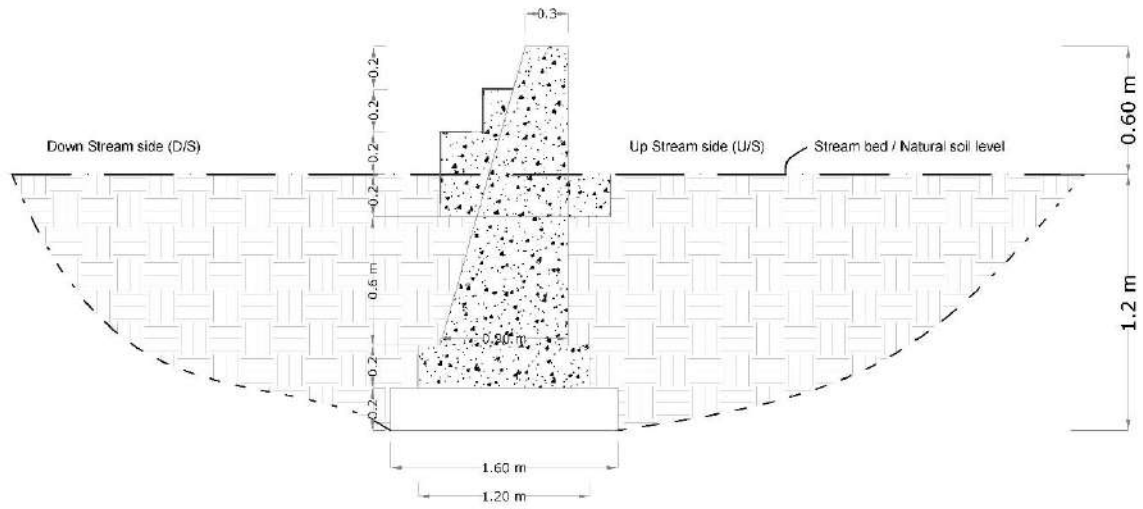
Source: WBFD

• Example of Species and spacing (Jalpaiguri Division)

Line	Species and spacing
1st line- 24th Teak line	Stumps planting of Teak at 2mX2m spacing with bamboo in central Teak line 8m a part.
25th - 32nd line	Lahasune, Panisaj, Gokul and Sidha in alternate strips of 27m long.
33rd -40th line	Lali, Kanchan, Lampatey and Gamar in alternate strip of 27m long with Simul or Kainial in central line 27m apart.
41st- 48th line	Champ, Chiloune, Chikrasi and Bahera/Amloki in alternate strip of 27m long.

Source: Tenth Working plan of Jalpaiguri (2016-26)

Attachment 8.6.3 Indicative Drawings of a Check Dam to be Constructed in the Protected Area in Hills & North Bengal Landscape



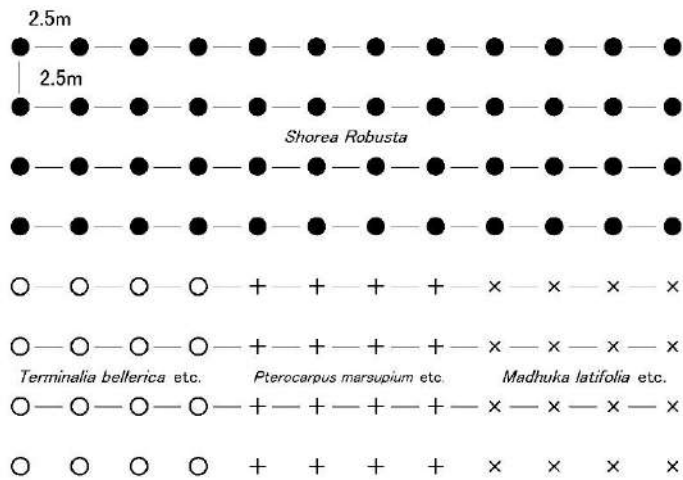
Source: WBFD

Attachment 8.6.4 Description of Plantation Model for Sal Plantation in Dry Lateritic & Alluvial Landscape

• Description of Sal Plantation Model in South Bengal

- Spacing 2.5m x 2.5 m, 1600 trees/ha, Pit size: 60cmx60cmx 45cm
- Planting of 1.5 year old seedlings.
- Box trench size 50cm x 45cm x 45cm 500 mt/ha
- Barbed wire fencing
- Watering by shallow dug well
- 3 years maintenance
- Application of insecticide and other chemicals as required
- Cleaning and mulching 4 times/year in the first year
- Fireline 3m wide, watch and ward

Source: WBFD



Source: WBFD

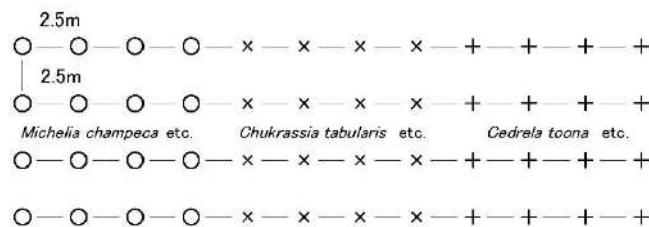
Diagram of plantation design of Sal plantation in South Bengal

Attachment 8.6.5 Description of Applicable Plantation Model of Miscellaneous Plantation in Dry Lateritic & Alluvial Landscape

• **Description of Miscellaneous Plantation Model in South Bengal**

- Target forest type: Scrub or open forest
- Spacing 2.5m x 2.5 m
- 1600 trees/ha
- Box trench size 5 m x 0.45m x 0.45m 500 mt/ha
- Barbed wire fencing
- Watering by shallow dug well
- Three years maintenance
- Application of insecticide
- Cleaning and mulching 4 times/year in the first year

Source: WBFD



Source: WBFD

Diagram of plantation design of Miscellaneous plantation in South Bengal

Attachment 8.6.6 Forest Cover Map- Vegetation Type (Example of vegetation map preparation in Sustainable Catchment Management Project in Tripura)

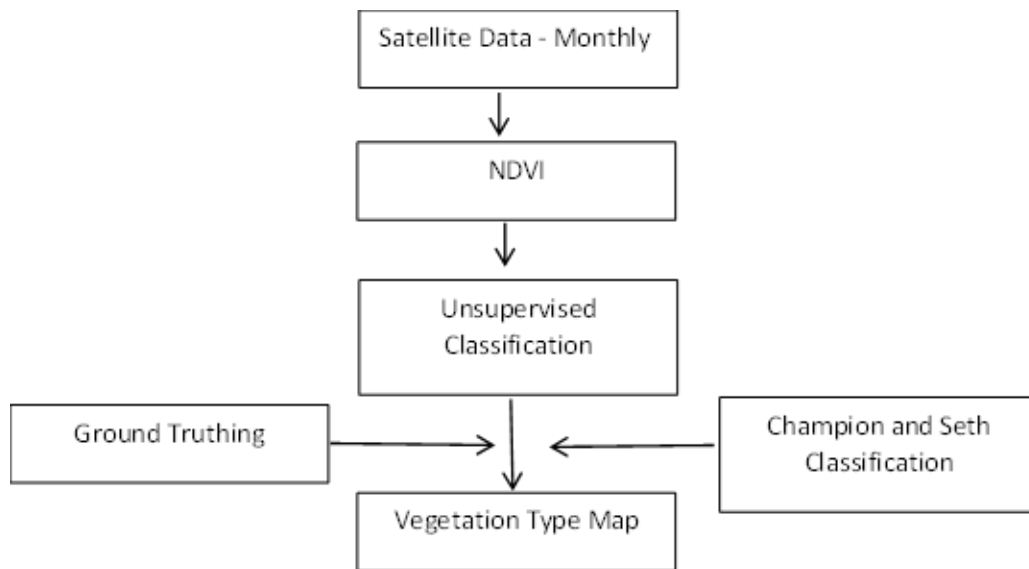
Multi-spectral Sentinel Data of 10m resolution will be used for preparation of vegetation type maps at 1:25,000 Scale. Vegetation Type are essential parameters for characterization of forest conditions.

The calculation of Type maps from satellite images involves analysis utilizing data derived from Normalized Difference Vegetation Index (NDVI) calculated as $IR-R/IR+R$.

Monthly Sentinel data will be downloaded and processed to prepare FCC of the area. NDVI of every month will be calculated. NDVI for all the 12 months will be calculated. (excluding the months/scenes with cloud data).

NDVI for each month is then stacked through layer stack and run Unsupervised Classification. Classification is then done based on Champion and Seth Classification for Vegetation Type and Stock Maps based on growing stock in the field.

After the classification, based on the understanding of the region. The maps are then taken for ground truthing and corrected with the information from the field.



Source: Sustainable Catchment Forest Management Project (SCATFORM), Tripura

Attachment 8.6.7 Models to be Undertaken under CAT Plan

a) Staggered Contour Trenches

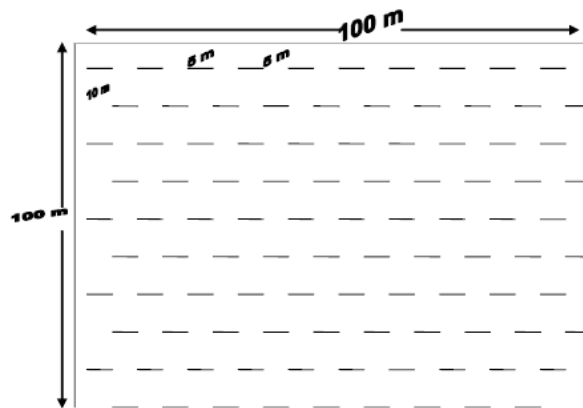
Trenches of 5m length and 0.45 m x 0.45 m size are dug all over the plantation area 5m apart in contour lines, in a staggered manner, the lines being at 10.0 m interval. The main purpose of the contour trenches are to check run off, arrest soil and conserve moisture.

Digging a trench along such a line increases the chances of containing runoff for a longer period of time within the trench. If trenches were not to follow a contour, such digging could actually increase the possibility of soil erosion because there would be a rise in the velocity of runoff following an increase in the slope of the land.

Staggered Contour trenches involve simple earth work that may be undertaken by the villagers/ JFMC members under the guidance of Forest Officer. Contour trenches are used both on hill slopes as well as on degraded and barren waste lands for soil and moisture conservation and afforestation purposes. The trenches break the slope and reduce the velocity of surface runoff. It can be used in all slopes irrespective of rainfall conditions (i.e., in both high and low rainfall conditions), varying soil types and depths.

The extent of the contour trench shall be determined the area more than 10% slope and above. In the areas with moderately loamy soil contour trenches may be dug at suitable intervals depending on the slope. This will intercept runoff and help infiltration. In the south-western Bengal (Bankuara, Purulia, Birbhum) the major soil is laterite red loam having moderately heavy subsoil, the size of the contour trench should be sufficient to intercept at least 12 hours of continuous runoff. Staggered contour trenches with intermediate spaces are more effective than continuous contour trenches. The dugout soil is neatly piled in the shape of a 'bundh' embankment.

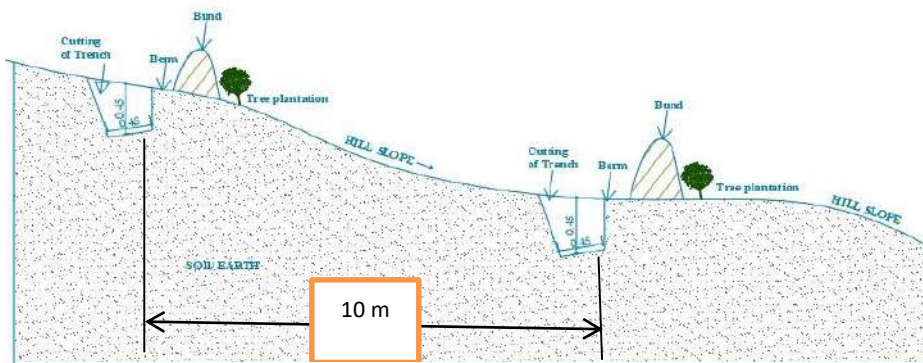
In areas where there is an abundance of trees and vegetation, gaps in the excavation area in any case essential to allow space for the roots of the trees to spread and the contour trenches. Also, maybe there are hard rocks underneath the soil, trenches must be staggered and contour.



Source: WBFD

Layout of the Staggered Countour Trench

b) Hand packed walls in hills/ Loose Boulder Structures:



Source: WBFD

To plug gullies with locally available materials with vegetative cover, hand-packed stone/ boulder wall is a small, temporary or permanent dam constructed across a drainage ditch, gully, swale, or channel to lower the speed of

concentrated flows (like an overflow weir) for a certain design range of storm events. A gully plug can be built from logs of wood, rough stone, boulders, pea gravel-filled sandbags or bricks. These structures are relatively cheap and can last about 2-5 years. It has been used widely in India. It is very simple to build with local labourers; however, having restrictions in the height to which they can be built; would require regular maintenance.

c) Brushwood check dam:

Brushwood check dam is the combination of timbered trees/ bamboo posts as a fence and is functioned as gully plugging when assembled in a box/ chained manner and situated in the gully. Soil and/or Stones and/or fallen tree leaves is/are put into the box to arrest the sediment from flowing downstream in the gully valley. The local bamboo/ trees can be used as frame bars for the brushwood fences. This can be also mixed with the vegetative cover. Planting some grasses that are resistant to soil erosion is very important.

Salient Features:

- For making the structure more durable, it is combined with connecting wire or rope is advisable to be bonded on the junction of the mesh.
- Brushwood check-dams shall be prepared in the degraded valleys in the target/ project area.
- Locations of the brushwood check-dams shall be determined in the sites by the forest officers in consultation with the members of JFMC.
- A simple and cheaper method is to establish suitable vegetation along the foot of the check dam.
- The seedlings should be planted densely in single or more rows. These can provide good resistance to even small or moderate water flows. Any tree or shrub species, such as Alnus, pine, bamboo, salix, poplar, etc., can be used as posts
- Brushwood check dams are made of natural material, and the 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 every two years with site clearing and repair of brushwood check-dams by use of natural material around there.

- Posts are set in trenches (0.3 by 0.2 m in size) across the gully to a depth of about 1/3 to 1/2 of the post length, and about 0.3 to 0.4 m apart. The length of the posts is 1.0 to 1.5 m and their top-end diameter is 3 to 12 cm.
- The height of the brushwood check dam will be maximum of 1.0 m height to protect from failure.

d) Earthen Check Dam:

As a main Soil and moisture conservation works to maintain the water regime and soil fertility of the area by reducing soil erosion prevention on the particular hillside and to improve the livelihoods of the local communities, check dams shall be constructed. The main purpose shall be summarized as below.

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.

Water restoration to enhance the soil moisture conditions of vegetation, helps in ground water recharge capacity raising the water table in the area.

Availability of water ensures the increase of agricultural yield by multi-cropping.

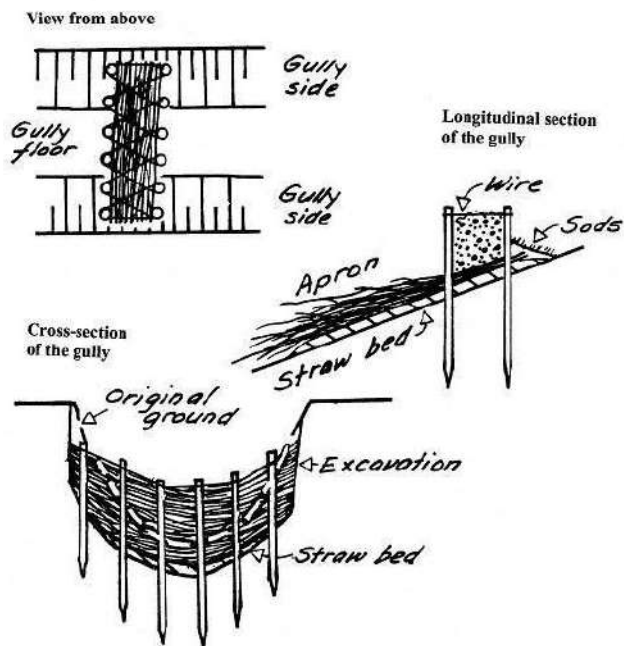
The reduction in the volume and velocity of runoff confers the following benefits:

Reduction in soil erosion
Trapping of silt which reduces the rate of siltation in check dam in the lower reaches

Increasing the soil moisture profile locally, which provides greater support to vegetation.

It increases the ground water table significantly.

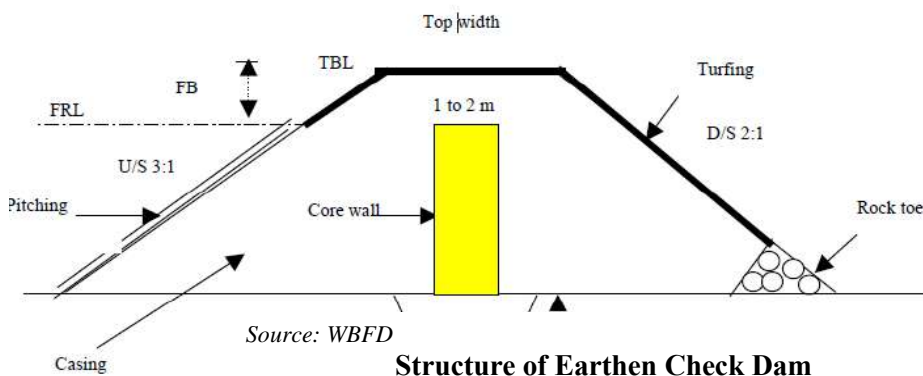
Increasing the duration of flow in the drainage line
Constructing the earthen check dam in the higher valley which maybe termed as percolation tank.



Source: Research manual on Gully Control in SAT Watersheds by ICRIASAT, Hyderabad

Figure Diagram of Brush wood Check dam

Hvderabad



Source: WBFD

Structure of Earthen Check Dam

Figure 8. **Cross section image of earthen check

Design Specifications:

As shown in the drawing alongside, the salient design features as follows;

- Water storage capacity: Minimum of 0.5 ha of pondage/ storage area
- Top width: 2.5 mt. to 3.0 mt.
- Bottom width: $6 \times 3 + 2.5 + 6 \times 2 = 35$ mt.
- Height of the dam: 6 mt.
- Upstream side slope: 1 Vertical : 3 Horizontal
- Downstream side slope: 1 Vertical : 2 Horizontal
- Puddle trench: Top 2.50 mt., Bottom 0.50 mt. and height 0.90 mt.
- Core wall: 0.60 m width, 3.5 mt. height, length = equivalent to dam length
- Rock toe: 1.0 mt. x 2.0 mt. x 0.90 mt.
- Grass turfing: upstream side freeboard length + width of dam + downstream side length
- Freeboard: 1.5 mt. to 2.0 mt.
- Full reservoir level: The highest level of water storage or spillway level
- Settlement allowance/ Ramming of the earth in the check dam: 10% of the earthwork
- Seepage line: An imaginary line passes through the embankment from the Upstream side to the downstream side.

Source: WBFD

e) Earthen Bunding as part of Land Development for JFMC members:

Land levelling is a measure used in bench terracing land and converting it into a bigger patch of land for agricultural needs. In the bunding are will do the bund plantation. It consists of preparing the available plot in a way that no high and/or low spots disturb the uniform distribution of water on the field, and ensuring the optimal slope for water movement across a field during the rainy season.

- Land Development works are mainly earthen works for the development of land to make it suitable for cultivation on a sustained basis. Under this earthen bund, land leveling, contour bunding, terracing etc. are covered in the cropland or wasteland for sustainable agricultural development.
- By dividing the field into several units, bunds control the volume and velocity of runoff in each such unit. The water in the field and the soil it is carrying are stopped at each bund. Thus, by not allowing water a long stretch of free flow, bunds break the momentum of water. Bunding improves and stabilises the soil moisture profile¹.
- A series of bunds of suitable height and top & bottom width is constructed across the slope at suitable intervals which checks the flow of runoff and aids in the conservation of water within the land area under bunding. This gives increased production from the cultivated lands.
- When land slope is more, bunding is not effective for checking erosion. In such cases, benches are made by half-cut half fill of the top soil across the slope of the land.
- In the field bunding, the JFMC members will plant tree saplings based on the choice by them.

Farm bunds are low-cost, rapidly responsive, and a high adoption intervention. They are useful for both dry and high rainfall regions. In dry regions, they hold rainwater in the fields and improve the soil moisture, whereas in heavy rainfall areas they hold water in the fields and protect from soil erosion. In both the situations, the farmers get the benefit of increased crop yield, protection from soil erosion and improvement in soil moisture. Earthen Bunding as part of Land Development for JFMC members.

Attachment 8.6.8 Implementation Schedule of Activity 1.3.1.2 Pilot Implementation of Mangrove plantation with instalment of traditional coastal defence structures

¹ Refer to the NREGA activities by GoI, various watershed activities are clarified.
https://nrega.nic.in/Circular_Archive/archive/guidelines_for_New_works.pdf

Activity	2024			2025			2026			2027			2028								
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Site selection with detail study of satellite image and field survey	■																				
1st batch (3 villages)																					
Planning with villagers			■																		
Mangrove plantation with embankment work				■																	
Installation of bamboo structure					■																
Monitoring						■															
Evaluation							■														
2nd batch (3 villages)																					
Planning with villagers							■														
Mangrove plantation with embankment work								■													
Installation of bamboo structure									■												
Monitoring										■											
Evaluation											■										
3rd batch (3 villages)																					
Planning with villagers																					
Mangrove plantation with embankment work																					
Installation of bamboo structure																					
Monitoring																					
Evaluation																					

Source: JICA Survey Team

Attachment 8.8.1 (a) Indicative ToR for External Agency to provide IGA Support

Procurement of External Agency to Provide Implementation/Technical Support for Community Based Livelihood Activities in Selected Villages of West Bengal

Project Background

WB-FBCCCR supported under ODA loan by JICA has planned to implement livelihood activities in 600 JFMCs across 29 Forest Divisions in West Bengal. The IGAs are to be implemented by Livelihood Groups /SHG/individual entrepreneur who will be provided revolving loan to plan and implement activities for income enhancement.

Duration of Assignment: 4 Year in staggered manner

Objective of the Assignment

- Deploying/placement of qualified staff.
- Provide planning and implementation facilitation support for disbursement of microfinance loan to selected Livelihood Groups/SHGs/Individual entrepreneurs at village/JFMC level.
- Support planning and implementation of livelihood interventions for sustained income of participating community.

Key Tasks of the Agency

- Identification of existing and potential livelihood activities in each project village.
- Support identification of Livelihood Groups/SHGs/Individual entrepreneurs who have potential and good leadership and willing to implement IGA and or Individual entrepreneurs who are willing to upscale existing business.
- Provide planning and implementation facilitation support for disbursement of microfinance loan to selected livelihood Groups/SHGs/Individual entrepreneurs at village level, repayment of loan, linkages with MFI/banks with support from project staff and forest department officials deployed by the Project.
- Facilitate institutional development group management, leadership, record keeping, finance management of Livelihood Groups/SHGs.
- Facilitate development of business plan by group/individual, assist in value addition of products, development of new products.
- Assist in procurement of machinery/tools, accessories to be procured by Group/Individual entrepreneurs.
- Facilitate skill development/improvement of group members for selected IGAs.
- Conduct marketing study prior to identification of activities and implementation.
- Facilitate Group/Individual to establish market linkages.
- Ensure social and environmental safeguard if any while planning and implementation of livelihood interventions.
- Conduct monitoring.
- Submit project progress report.

Scope of Work:

- The agency will enter in an agreement with PMU to provide required services for a period of 4 years.
- The selected agency will engage result oriented human resources having proven experience in management of microfinance, IGA planning and implementation.

- The agency will develop its annual operation plan, monthly and quarterly plans, with the budget, in accordance with the Annual Action Plan.
- Provide technical assistance in livelihood improvement component and work within the project framework with coordination project implementing units- PMU, DMU and FMU.

Qualification of Agency

- Incorporated as society/company/MFI in India
- Have qualified man power in microfinance, livelihood planning and implementation in West Bengal.
- Having established proven linkages with local/regional/state level market
- Minimum 7 years of experience in implementing/undertaking microfinance, livelihood/entrepreneurship development, linkages to financial institutions
- Annual turnover of not less than 10 million INR on an average in last three financial years.
- Not black listed by external funding agency, Government institutions.

Position, Qualification, Experience and Key Tasks of Consultant Team

Position	Team Leader and Microfinance/Revolving Fund Management Expert
No. of Position	1
Educational Qualification	<ul style="list-style-type: none"> • Master Degree in Economic /MBA/Post Graduate Diploma in Finance Management/Banking, or Related Field. • Fluency in spoken English and Bengali. • Good writing and presentation skills.
Experience	<ul style="list-style-type: none"> • Minimum of 7 years' experience in microfinance/loan management, livelihood improvement in rural areas. • Minimum of 4 years' experience of working in West Bengal. • Proven experience of leading a team for at least 2 similar assignments.
Key Tasks	<ul style="list-style-type: none"> • Overall project management • Provide leadership to team of experts. • Coordinate with PMU, DMU and FMU. • Ensure planning and implementation of livelihood interventions in the project area. • Ensure revolving of loan, timely repayment and fund management at SHG/Livelihood Groups Level in JFMC • Ensure timely deployment of team members. • Assist PMU in developing relevant guideline, manuals, formats under livelihood component of the project. • Establish networking/linkages with MFIs, banks, business organization, similar livelihood schemes • Make technical presentation. • Ensure monitoring of activities at PMU, DMU and FMU level, • Prepare progress report
Man months	20 man- months in staggered manner

Position	Entrepreneurship Development Expert
No. of Position	1

Educational Qualification	<ul style="list-style-type: none"> • Master Degree in Economics or in related field /MBA/Post Graduate Diploma in Entrepreneurship/Business Development/Management or Related Field • Fluency in spoken English and Bengali. • Good writing and presentation skills.
Experience	Minimum of 5 years' experience in microenterprise/business development / livelihood improvement at community level in rural areas with experience of working in West Bengal.
Key Tasks	<ul style="list-style-type: none"> • Support SHG/Livelihood Group/Individual Entrepreneurs/ FMU in identification, establishment of community level business plan, implementation and management. • Support in developing product-based cluster in project areas. • Coordinate with PMU, DMU and FMU. • Conduct and organise need based skill development training of selected IGAs. • Ensure timely implementation of business plan in JFMCs/village and upscaling of business over a period of time. • Assist PMU in developing relevant guideline, manuals, formats under livelihood component of the project. • Assist Team Leader in monitoring of activities at PMU, DMU and FMU level, • Assist Team Leader in preparation of reports/documents.
Man months	28 man -months in staggered manner

Position	Marketing Expert
No. of Position	1
Educational Qualification	<ul style="list-style-type: none"> • Master Degree/MBA in Business Management/Marketing or Post Graduate Diploma in Marketing or Related Field. • Fluency in spoken English and Bengali. • Good writing and presentation skills.
Experience	Minimum of 5 years' experience in marketing of rural products with experience of working in West Bengal.
Key Tasks	<ul style="list-style-type: none"> • Develop overall marketing plan and strategy. • Support SHG/Livelihood Group/Individual Entrepreneurs/ FMU in identification, establishment of markets for products. • Coordinate with PMU, DMU and FMU. • Conduct and organise need based training for Livelihood Groups/SHG/Individual entrepreneurs on marketing of products. • Ensure market linkages. • Assist PMU in developing relevant guideline, manuals, formats under livelihood component of the project. • Assist Team Leader in monitoring of activities at PMU, DMU and FMU level, • Assist Team Leader in preparation of reports/documents.
Man months	28 man -months in staggered manner

Position	Product Development Expert
No. of Position	1
Educational Qualification	<ul style="list-style-type: none"> • Master Degree//Post Graduate Diploma in Design and Development or Related Field • Fluency in spoken English and Bengali. • Good writing and presentation skills.
Experience	Minimum of 5 years' experience in rural based products, especially products produced by village based SHG/Livelihood Groups with experience of working in West Bengal.
Key Tasks	<ul style="list-style-type: none"> • Support development/value addition/processing of forest and non-forest products in JFMCs/villages. • Assist FMU/DMU in procurement of machinery, tools and related items. • Coordinate with PMU, DMU and FMU. • Conduct and organise need based training for Livelihood Groups/SHG/Individual entrepreneurs on product development. • Ensure timely development of finished marketable products. • Assist PMU in developing relevant guideline, manuals, formats under livelihood component of the project. • Assist Team Leader in monitoring of activities at PMU, DMU and FMU level, • Assist Team Leader in preparation of reports/documents.
Man months	28 man -months in staggered manner

Attachment 8.8.1 (b) Long list of Potential External Agency to provide IGA Support

Potential Specialized Microfinance Institutions in West Bengal

There are more than 43 NBFC, NBFC-MFI NGO-MFI, Bank, Small Finance Bank operating in West Bengal (Annual Report Association of Microfinance Institution-West Bengal). These institutions are providing microfinance to different regions of West Bengal, to small borrowers who need loan for various livelihood activities as well as other essential personal need.

Amongst MFIs, following organizations have better credibility, portfolio, and performance (as informed by CEO, AMFBI, dated 7 September 2022)

Satya Microcapital Ltd., Kolkata

Established in 2017, Satya Microcapital Ltd. is graded as MFI 2+ on an eight-point scale with “(MFI 1” being the highest and “MFI 5” being the lowest by CARE Advisory Research and Training Limited (CARE Advisory). The MFI has also been graded as CI by SMERA COCA for excellent performance on code of conduct dimensions in 2022. MFI has also won the award as “Winner” in the 8th MSMEs Excellence Awards in 2022 for “Excellent Services of the year” organized by ASSOCHA.

Satya Microcapital is serving 22 states including West Bengal in microfinancing, significantly contributing to women empowerment by generating additional income earning opportunities.

Arohan Financial Services Ltd, Salt Lake Kolkata

Established in 2006, Arohan Financial Services Ltd is one of the largest NBFC-MFIs in India based on Gross Loan Portfolio (GLP) with a GLP of INR 4122 crores as on March 2022 (Source: MFIN Micrometer, Company Research). MFI covers 14 states as of now including West Bengal and works with a group of women, JLG for sustainable livelihood development taking entrepreneurship-based approach towards development.

Village Financial Services Ltd, Kolkata

Established as Village Welfare Society in 1982-83, Village Financial Services Private Limited came into existence as NBFC in 2006-2007 to provide microfinance support through group lending, SME/MSME. Its credibility is evident as it has been graded MF I in 2022 by Infomerics Analytic and Research, and MIC2 by SMERA (SME Rating Agency) in 2022.

Other good MFIs are Sarla Development and Microfinance Pvt. Ltd., Kolkata, Ujjivan Small Finance Bank, Kolkata, Uttarayan Financial Services Pvt. Ltd., Kolkata and Jagaran Microfinance Pvt. Ltd. Kolkata

Association of Microfinance Institution (AMFBI) -West Bengal

Registered Public Charitable Trust (self-regulatory body founded in 2010), brings under its umbrella a community of 43 microfinance organizations having their operation in the State of West Bengal.

AMFBI- WB envisions a community of microfinance institutions who are committed to bring significant changes in lives and status of poor, especially rural women.

AMFBI- WB monitors MFIs function, coordinate with local bodies, NGOs, Panchayats, National and International Bodies, organise and conduct seminar, workshops, and training.

Attachment 8.8.1 (c) Indicative Mode of Procurement and Indicative Selection Criteria

Mode of procurement: LCB

Selection Criteria:

- Agency should be registered as society/NG)-MFI or MFI.
- Should have annual portfolio of 50.00 crores.
- Agency which competes in QCBS process of selection will be selected.
- Should have presence in West Bengal for a minimum of 5 Years operation in microfinance, enterprise development and marketing support.

Attachment 8.8.2 Elaboration of Indicative Microplanning Process

The following process of microplanning can be referred to while revisiting the microplanning manual of Phase 1.

① Orientation of Forest Officials and Contractual Staff

- An orientation program on microplanning will be organised for the forest officials of FMUs, LC, JC, EWs shall be organized by respective DMU before actual start of microplanning in JFMC.
- Roles and responsibilities of Microplanning Team and Women Working Group, EWs, Livelihood/JC, Forest Department shall be clarified during orientation. Theoretical orientation will be followed by hands on training in the field.

② Review of Existing micro plan of Other Departments

Prior of conducting microplanning, existing micro plans prepared by other departments will be reviewed for developing understanding on activities planned.

③ Formation of JFMC Lvel Microplanning Team

Before actual start of the microplan preparation a microplanning team at JFMC level comprises of Executive Committee members, EW, teacher, panchayat representative/GTA councillor, social worker, existing NGO representative in village of the village, forest guard shall be formed. The team should be comprised of 10-15 members taken from all constituent villages of a JFMC. Microplan team can be divided in two teams (with EC members, / contractual staff, other villagers) case no. of households is large in a JFMC.

④ Formation of Women Working Group

- Women working group will be formed with active SHG members, women members of EC of JFMC, aganwadi workers, women teachers etc.
- They will get acquainted with gender perspectives with respect to social development, forest management and livelihood improvement.
- Guide and advice for inclusion of gender specific issues and activities including women perspective during microplanning. The team should be comprised of 10-15 members taken from all constituent villages of a JFMC.
- Working Group can be divided in two teams (with EC members, other villagers) in case no. of households is large in a JFMC.

⑤ Orientation of Microplanning Team and Women working Group

- An orientation program shall be organized at FMU for microplanning team of all JFMCs of the Range in batches. Orientation topic will include objective of microplanning, roles and responsibilities of microplanning team and women working group, purpose of and description of methods of conducting PRA tools and its expected outcomes, methods of focussed group discussion with women, NTFP collectors, tribals and weaker section of people etc. Orientation will cover theoretical presentation and hands on training.
- Roles and responsibilities of Microplanning Team and Women Working Group, EWs, Livelihood/JC, Forest Department shall be clarified during orientation.

⑥ Data Collection on Socio Economic, Institution and Natural Resources

- Primary/secondary data (Socio- economic profile of the village, forest land, water resources, agriculture/waste land, skills available, artisans, domestic animal, primary and secondary occupation, facilities/infrastructures, livelihoods etc.) shall be collected.
- Primary data on socio-economic profile of the JFMC will be collected through household surveys. Sample households may be considered for conducting survey if a JFMC has large number of households (more than 40 households). Sampling will be done using stratified random sampling

method.

Besides, using household survey format, data on the following will be collected during group discussion.

Institutional Data

Functioning status of JFMC, SHG and other organizations, their activities and working relation among them, existing conflict within JFMC and with neighbouring JFMCs, human wildlife/elephant/bore conflict, conflict with government departments/panchayat/GTA if any.

Forest/Natural Resource Data

Natural resources (water, agriculture land, plantation, forest, animal, fish etc.) available in the village, status, uses and management issues, including CCA management and conservation issues, extent of degradation, factors of degradation (e.g. forest fire, poaching, unsustainable harvesting, commercial exploitation of certain products etc.), agriculture/horticulture production, uses and problems, wildlife protection and management issues etc.

Data on Economic/Livelihood Issues

Current income generation activities being implemented in the village and level (individual/group etc.) of beneficiaries, various skills pertaining to livelihood (e.g., handicraft/handloom, animal husbandry, farm-based activities, NTFP processing, ecotourism-based activities etc.) available, income generating resources of the village and microfinance linkages.

⑦ Participatory Rural Appraisal

Participatory Rural Appraisal (PRA) will be conducted involving all section of villagers by Microplanning Team and facilitated by JC/LC and EW. During PRA, information/data on various topics issues related with livelihood, forest conservation and management, biodiversity and wildlife conservation and management, natural resource management and village development shall be collected and analysed.

PRA tools like village resource map, forest resource map, Venn diagram, seasonal calendar, wealth ranking, forest threat ranking, historical trend line/changes in natural resources over time, impact of wildlife conflict on people, human-wildlife conflict measures, livelihood opportunity analysis, dependency of people on forest resources etc. shall be applied. Men and women both will be involved to get their perspective while conducting PRA.

⑧ Focused Group Discussion

Focused Group Discussion (FGD) will be conducted with key participants who can share information and ideas to discuss specific issues (e.g., forest conservation and degradation, women status, poverty, forest/non-forest-based livelihood, impact of disasters like cyclone, flood, drought etc.) with a group of people having similar backgrounds or experiences.

Suggested Type of Groups formed for Focused Group Discussion (FGD)

Groups	No. of Participants in Each Group	Issues to be Discussed
Women	15-20	Participation in JFMC meeting, role in JFMC, benefits from forest, current livelihood activities, problems in livelihood implementation, microfinance support etc.

NTFP Collectors	15-20	Availability of NTFPs, collection, value addition, marketing/sale, availability of finance, problem faced etc.
Farmers	15-20	Farming practices, availability of farming facilities (irrigation, technology, fiancé), impact of drought/flood /cyclone on farm-based livelihoods, village infrastructure etc.

Capturing Data through Participatory Rural Appraisal /Focus Group Discussion

Microplanning Team will use relevant PRA tools to get reliable information from community on livelihood, forest management, biodiversity conservation etc. and analyse.

Following formats will be used for data collection:

Suggested Formats for PRA/FGD

Format – I: Socioeconomic Profile of The JFMC

Socio-economic information of village will be captured through primary data collection and secondary sources and documented in the micro plan.

Format – Ii: Livelihood Opportunity Analysis

- The livelihood analysis will focus on diversification of livelihood options across the landscapes to mitigate or reduce risk from disasters.
- The livelihood analysis will be made in consultation with villagers through participatory method. It will spell out the constraints, opportunities in the context of farming, fishery and NTFPs collection, use, storage, processing, and credit facilities etc.
- The analysis will aim at identifying potential activities with a view to enhance productivity and improve income level.

Format III- Forest Conservation And Mannagement

- Community will be consulted on impact of climate change on forest resource availability and its use. Discussion will also be held on exploring measures for mitigating/ reducing effect of climate change through various intervention.
- Data on various aspects of forestry such as status of forest area protected by JFMC, composition of existing forest crops, soil type, collection, and use of NTFPs including medicinal plants, collection of forest products, value addition and marketing of NTFP would be collected for analysis and preparation of treatment strategy and forest management plan.

Format IV- Biodiversity Including Wildlife Conservation And Mannagement

Wildlife hazards cause hazards to crop, houses, human lives, and stress among community. So, community views and suggestions for reducing wildlife hazards will be explored during microplanning. Information on biodiversity (flora and fauna such as elephant, bore), impact of climate change on biodiversity, current status/degradation, wildlife conflict hazards and impacts on agriculture, human lives, houses and economic activities, opportunities of mitigation shall be captured through FGD/PRA and documented in the format.

Negative impact of Human-wildlife conflicts will include the wild animal species involved, number of people, or extent of area affected, history and seasonality of the problem, extent of damage or loss

and compensation patterns. The issue can be discussed while conducting resource mapping/conducting transect walk.

The impact would generally include the following:

(a) Crop raiding

(b) Cattle lifting

©Death/injury to humans

(d) Damage to property e.g., by elephants

Format V- Natural Resource Development

Information on natural resources development by various departments/schemes to improve irrigation water/ agriculture land improvement, problems and opportunities etc. shall be discussed and obtained through survey and FGD and same shall be captured in the format.

Format VI- Village Development

Information will be gathered from villagers/ local government departments and panchayat on schemes/projects/activities implemented by various agencies in past and ongoing. Such activities shall be documented along with the major short comings during implementation and learning from the schemes/projects.

⑨ Mechanism to Facilitate and Plan Convergence for Strengthen Community Resilience

During microplanning villagers may express need for infrastructures/services/works/livelihoods which project cannot support due to budget constraint. Microplanning team will discuss feasible activities in micro plan which can be implemented with convergence with concerned departments.

West Bengal government has around 28 schemes currently implemented by different departments so there are opportunities available to establish convergence with schemes Therefore, JFMC will be facilitated to plan activities through convergence during micro-planning and annual planning.

The emphasis will be given to establish convergence with line department to support activities on climate resilient agriculture in deltaic and dry lateritic alluvial landscapes as both areas are severally affected by climate change impact. Opportunities will be created for technical capacity improvement of community to grow climate resilient crops (ex. tulsi mukul paddy in dry area, dudheshwar, patnaki, talmugur paddy variety which are saline resilient, adaptive to salinity in delta) to improve their resilience capacities and risk mitigation strategies with support from relevant line department and other agency in the area.

Representative of Panchayat and Rural Development, Agriculture, Irrigation, Animal Resource Development, Fisheries, NGOs working in concerned Block, Local traders dealing with purchase and sale of various products, District level Manager of NABARD will participate in microplanning so that realistic activities can be planned with convergence.

HPC is an appropriate place to present planned activities in JFMC level annual action plan through convergence and seek support from HPC members (representing line departments). Before planning of

convergence at JFMC level, the project needs to collect information about schemes implemented by various department in the areas and explore opportunity of association for training support, finance, etc.

Type of convergence

1.Resource-based

Provision/schemes of agricultural inputs by Agricultural Department, provision of daily wage and infrastructure development under MGNREGS, provision and schemes of Animal Resource Development Department, Amar Gola (My Crop, My Storehouse) and Amar Fasal Amar Gari (My crop, my vehicle) for marginal farmers. Jal Dhara-Jal Bhara (Check Dams, Water harvesting Tanks and Surface Flow Minor Irrigation Schemes) implemented by Water Resources Investigation & Development Department.

West Bengal Tribal Development Cooperative Corporation Ltd. (WBTDC) and State Medicinal Plants Board (SMPB) (please see **Attachment 3.1**)

2.Service-based-

Agricultural extension services offered by Agricultural Department, Animal Health Care Services by Animal Resources Development Department.

3.Entitlement/Social Security-based

Public Distribution System (PDS)/ Swasthya Sathi, Annapurna Scheme, Atal Pension Yojana; Kanyashree; etc.

⑩ Feasibility Analysis of Micro Plan Activity

Feasibility analysis of each proposed activity will be undertaken by the Micro plan Team facilitated by JCs/LCs before finalization of activity during meeting in presence of large gathering. Instead of Microplanning Team along with facilitators analysing feasibility, he/she facilitate villagers to explain why these activities will not have any negative impact on society, local environment, and whether villagers have required technical knowledge/skill to implement.

Following feasibility criteria will be shared and people will be involved in analysing feasibility of each activity:

- Micro plan activities should be feasible, and its feasibility should be examined keeping four criteria in mind.
- Socially acceptable: Activities should be endorsed and accepted by all section of the people (landless, marginal farmers, women, and weaker sections of the village. Further it should not harm local culture/traditions and social fabric.
- Technically Feasible: Only those activities which can be handled and managed /maintained by local people with should be considered.
- Economically Viable: Activities should be economically beneficial to community in long run.
- Environmentally Sound: Activities selected should not harm local natural resources, health and environment rather improve environment and develop community resilience against climate change.
- Forest management and biodiversity conservation activities to be included in the micro plan should be in line with the working plan and protected area management plan.

⑪ Social and Environmental Safeguard

Activities proposed will be examined by JFMC during microplanning as well as by FMU from social and environmental point of view to ascertain negative impact on society and environment/ forest/biodiversity. Measures will be taken to ensure that activities selected should not have any adverse impact on society and local natural sources and environment in short or long term. PMU with support from PMC will develop proforma with guideline for ensuring social and environmental safeguard. Appropriate safeguards measures will be discussed and documented in the plan and implemented to reduce/ mitigate the adverse impact if any.

⑫ Developing Final Activity Plan in Micro plan

During PRA exercise and FGD, villagers may come out with the list of activities such which they want to implement. Facilitators will not discourage the villagers rather facilitate them to express their wishes and note down the activities as wish list one by one.

However, activities to be undertaken in the village will be finalized during general meeting. The final plan which may also be termed as Work Schedule of each activity will include name of activity, location (physical &GPS) quantity, unit cost, total cost, year wise cost, contribution from the community, contribution from project/convergence, beneficiaries, types of benefits expected, negative impact on society and environment, social and environmental measures.

Contents of micro plan

Forest Management Plan

Improving quality of forests ANR of degraded Sal forests (coppicing)

- Sal Plantation
- Miscellaneous Plantation

Biodiversity Conservation & Restoration Plan

Biodiversity conservation through people’s participation in protected area

- Mitigation of Man-Animal Conflict in PAs
- Conservation Awareness Generation in PAs
- Human Wildlife Conflict Mitigation
- Community Based Plan for Human Wildlife Mitigation in PAs

Livelihood Development Plan

Based on natural/forest resources, climate, and available livelihood options potential livelihood activities will be identified. Indicative activities have been suggested in Support to IGA component.

Community Infrastructure Development Plan

The need for productive asset creation under CDA shall be explored during the microplanning and implemented through project money as well as convergence with state plan activities and line department support.

It should be kept in mind that activity should benefits larger section of the community and not few individuals.

Community Development Plan

Facilitators will identify community development activities other than CDA identified in the project which has scope for the implementation with convergence should be developed with convergence of

line departments/schemes. Such plan may include, solar light, construction of cremation place, toilets, animal, and human health camp programs, etc.

Community Well Being Plan

Promoting conservation, knowledge, and use of medicinal plants from forest and nursery involving traditional healers.

⑬ Compilation of Data and Writing of Microplan

- All the information collected through socio-economic survey, interview with key informants and information from PRA/FGD/Survey shall be analysed and entered different Performa as well planning for micro plan activity in project shall be drafted in specific proformas by JC with the assistance of EWs.
- All PRA maps, chart, figures, and photographs of meetings/survey FGD and PRA should be included annexures in micro plan.

⑭ Review of Microplan, Approval and Circulation

The draft microplan may contain errors, and non-conformity with working plan and project objectives. Therefore, plan shall be examined from all angles including technical, social, financial, and legal angle. Suggested modifications and necessary amendment of the draft micro plan shall be incorporated. Final microplan will be approved by DMU and circulated to JFMC, FMU and a copy will be kept at DMU.

Special remarks

- Updated/revised microplanning/manual/guideline shall be printed in Bengali/Nepali and English and circulated among the different stakeholders (DMU, FMU, Beat and among Microplanning Team members) before actual start of the microplanning in the JFMC.
- Date, time, and place of microplanning shall be communicated by FMU at least a week before holding of microplanning.
- EWs will follow up with EC of JFMC to ensure participation of maximum number of JFMC members.
- EWs, JCs/LCs along with Micro plan Team will collect primary and secondary data in prescribed format. The same team will conduct PRA for micro plan preparation.
- Helmet wise/para wise /village wise PRA/FGD etc. will be conducted in JFMC which has large no of households (>150) or a JFMC which is constituted jointly by more than one village need to hold respectively.
- DMU In charge will invite Line Department Officials Working in concerned Block. Request letter for presence of officials will be send to the District Collector/District Magistrate with a request to depute officials from Line Departments to participate in microplanning exercise.
- Karmadhakshya or any member of the “Bon-O- Bhumi Sanskar Sthayee Samity, nominated by the Karmadhakshya will be invited during microplanning conducted in North Bengal plain areas, Dry Lateritic and Alluvial landscape and in Deltaic landscape or Local Sabhasad of GTA/or representative of the Sabhasad of GTA will also be invited to participate in microplanning in Hills (Darjeeling and Kalimpong Districts) of North Bengal.
- FMU In charge will follow up with the invitees and ensure their participation in microplanning exercise.
- JFMC will prepare microplan for 5 years with facilitation from FMU and JFMC level Microplanning Team and Women working Group.

- JFMC will be made responsible for procurement of item for CDA, establishment of infrastructures, monitoring of works and running of the infrastructure/ asset.
- DMU will transfer the fund in the JFMC account for CDA and Revolving Fund. JFMC president jointly with member secretary withdraw money and release payment to service providers/ vendors/ suppliers of Items, assisted by EWs and JCs will assist JFMC.
- Annual Review of microplan shall be conducted by JFMC with facilitation from FMU with assistance from JCs and EWs.
- Micro plan activities will be implemented by beneficiaries in supervision of EC members of JFMC. No microplan activities will be implemented unless it is planned with JFMC participation following PRA/FGD etc. and first approved by General Body of JFMC, endorsed/confirmed by EC of JFMC and approved by DMU.

Attachment 8.8.3 Indicative Cost Benefit Analysis of Potential IGAs

NTFP-Based Income Generation

NTFPs cover a wide range such as Sal leaves (for plate/saucer making), kendu leaves (used to make bidi/local cigarettes), mahua (fruits and flower), kaharanj (broom grass, sabai (grass for making rope and mat), satmuli (medicinal plant), harra, bahera, bael (used in ayurvedic medicine preparation), etc. In fact, 20 to 50% of household income is generated from NTFPs in the districts of Purulia, Bankura and Paschim Medinipur (Development and Planning, Department, Government of West Bengal, 2007). However, Sal leaves are most prominent as they are being collected and sold in different forms (raw, semi processed, processed) by JFMC members. Sal leaf-based business is lucrative and convenient for SHG members with respect to ready availability of leaves free of cost in nearby forest, traditional skills of collection and primary processing, ready market (local and regional) and outside state/country, a quick source of income etc. Therefore, a business model is presented for the Sal leaf plate/saucer making.

Indicative Model for Sal Leaf Business

Rationale:

Naturally growing Sal leaves in Sal forest of Dry Lateritic and Alluvial & North Bengal landscapes are collected free of cost throughout the year except rainy season (June and July). Collection and stitching leaves to make plates is traditional activity practiced by JFMC members/other villagers.

Yield of Sal leaves are not much impacted by climate change, hence income generation associated with Sal leaves are climate resilient and a viable economic activity without having negative impact on forest.

Sal leaves plates and saucers are usually made by hand by collectors in JFMCs. These plates and saucers are used as food plate during social, religious/other functions. Usually hand stitched leaf plates are sold to the local traders who collect them from makers. Sal leaf plate is not expensive, hygienic and biodegradable. There is an opportunity to convert handmade Sal leaf plate and saucer to machine made to increase production, and durability and enhance income of participating SHG. Besides selling of processed products, SHG members/collectors can earn income in lieu of supplying leaves for processing.

The business is economically rewarding as SHG can generate surplus/profit at a tune of INR **5,26,000.00 annually** on an initial investment of INR 2.00 lakhs.

Steps of Manufacturing Sal Leaf Plates/Saucer s:

- Collection and grading
- Assembling Leaves
- Joining leaves by hand stitching
- Pressing with polythene film
- Packaging

Scope of Project:

Due to increasing trend of using environmentally friendly products and avoiding plastic products, there is much scope of growth of this business.

Location of Activity:

JFMC selected under the project.

Beneficiary: SHG of JFMC

Support Required:

- Technical training on stitching with sewing machine, pressing in machine, packaging. The training will be organized by the project.
- Materials required: sal leaf, thread, sewing machine, pressing machine, packaging material
- Means of Finance: Loan to SHG provided by Project through JFMC

Currency: INR**Project Cost/Loan Amount :** 200,000.00**Interest Rate:** @2% per annum (assumed)**Repayment Period:** 18 months (interest to be charged for 18 months)**No. of Instalment:** 12 (note: instalment will start after six months of the disbursement of loan to SHG)**Total Interest Payable:** 6,000.00**Total Prepayment Amount:** Loan Amount + Interest= 200,000.00+6,000.00=206,000.00**Amount Payable Per Instalment:** 171,66.66**A. Fixed Cost****I. Machinery and equipment:**

Items	Unit cost	Quantity	Total Cost
Ball Press Machine	70,000	1	70,000
Dices for plate	25,000	1	25,000
Sewing machine	10,000	2	20,000
Heater	10,000	1	10,000
Small tools and equipment	LS		5,000
Total			130,000

II. Furniture and Other Costs (INR)

Items	Cost
Electricity fixing	4,000.00
Furniture and fittings	5,000.00
Pre operating expenses	1,000.00
Total	10,000.00

Total Fixed Cost (I +II) = (130,000.00+10,000.00)= 140,000.00**B. Recuring Cost Per Month (INR)****I. Raw Material**

Items	Rate	Quantity (no.)	Amount
Sal leaf in thousand	INR 60.00 per thousand	60,0000	36,000.00
Polythene sheet (kg)	30	60	1,800.00
Thread	LS	-	2,000.00
Packing material	LS	-	3,000.00
Total			42,800.00

II. Wages

Item	Rate	No.	Amount
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Wages of Processor (SHG Members)	3,500.00	2	7,000.00
Wages of Aggregators/Helpers/Unskilled Workers	2,000.00	2	4,000.00
Total			11,000.00

III. Other Expenses (INR)

Items	Amount
Electricity	3,000.00
Rent if any	1,000.00
Transportation	1,000.00
Tax and Insurance	200.00
Miscellaneous	1,000.00
Total	6,200.00

Total Recuring Cost/Working capital Per Month (I+II+III)=
 42,800.00+11,000.00+6,200.00=**60,000.00**

C. Total Project Cost (INR)

Item	Cost
Total Fixed Cost	140,000.00
Total Recuring Cost/ Working Capital Per month	60,000.00
Total	200,000.00

D. Projected Expenditure/Production Per Year

Expenditure		Projected Production of Sal Plate/Saucer per Year
Item	Amount	40,000 per month*12 months =480,000 50,000 per month*12 months =600,000
Working Capital/Recurring Cost	60,000*12=720,000.00	

E. Cost Benefit Analysis Per Year

Expenditure	Amount	Sale of Plate/saucer
Recurring Cost/Working Capital	720,000.00	480,000 plate*2.00 per plate=960,000.00 600,000 saucers *0.50 per saucer =300,000.00 Total Sale= 960,000.00+300,000.00=1,260,000
Depreciation@10%	14,000.00	
Total	734,000.00	
Surplus/ Profit	526,000.00	

Sustainability

Potential Market	Produced will be marketed directly to nearby market /town as it has high demand
Market Risk	Poor quality of product and quality control, irregular follow up, market linkages with potential traders
Impact on Forest, Land and Water, Health	It has got no adverse impact on forest, land and water, activity is hygienic and does not produce health hazard
Economic	Regular flow of income is expected to SHGs, it will support sustenance economy and help expand business and income

Spices Cultivation

Turmeric, ginger and garlic are potential spices for profitable business. However, ginger and turmeric are more profitable. For cultivation of these type of products one needs to invest only one time.

Business Model of Turmeric Cultivation(1 acre landholding) by Individual Farmer

Rationale

Turmeric is a spice traditionally and commonly used in each and every household as one of the important ingredients of various cooked meals. It is also used as medicine due to its medicinal property. In addition, use of turmeric is essential during many rituals/social and religious functions of Hindus. The worldwide demand of turmeric has increased due to the growth of the nutraceutical industry

worldwide. Its easy cultivation process and widespread market potential at local, regional and worldwide makes it high potential product for income generation in the selected project areas.

Climate change is a major concern for the agriculture sector including production of spices which necessitates the cultivation of climate resilient spices through conducive farm-based model. Spice sector is growing and among the crops, turmeric and ginger can be grown in diverse climatic conditions ranging from sea level to nearly 1500 meters above sea level under both irrigated and rainfed conditions. These two spices are found to be adaptive to changing climatic condition with a high degree of adaptability and contribute to enhancing resilience in farming systems, promote better soil health. The two spices can be grown in both, Hills and North Bengal and Dry Lateritic and Alluvial and Hills and North Bengal Landscapes of the project. The activity can be implemented by small farmers as well as landless who can rent land for cultivation.

Cultivation of Ginger and Turmeric are economically lucrative. An Indicative Business Model of Turmeric is presented here.

The turmeric cultivation is economically viable for a marginal farmer/landless who can generate surplus/profit at a tune of INR **206,475.00** annually on an initial investment of INR **93,525.00**.

Scope of Turmeric Cultivation:

Widespread use of turmeric as spice, medicine and in social/religious functions and its ability to cope with climate impact makes it viable product for income generation by ordinary farmers in the project villages.

Location of Activity:

JFMC selected under the project.

Beneficiary: Individual farmers of JFMC

Support Required:

- Technical training on cultivation, primary processing/grading/packaging and marketing. The training will be organized by the project.
- Materials required: seed, compost, packaging material
- Means of Finance: Loan to farmer provided by Project through JFMC

Currency: INR

Project Cost/Loan Amount : **93,525.00**

Interest Rate: @2% per annum (assumed)

Repayment Period: 15 months (interest to be charged for 15 months)

No. of Instalments: 6 (note: instalment will start after 9 months of the disbursement of loan to SHG)

Total Interest Payable: **2,338.00**

Total Repayment Amount: Loan Amount + Interest= **93,525.00**

+2338.00=95,863.00

Amount Payable Per Instalment: **15,977.16**

Business Model of Turmeric Cultivation(1 acre landholding) by an Individual Farmer

S. No	Particulars	Unit	Cultivation		Total Cost (Annual)
			Quantity	Cost Per Unit	
A. Land Preparation and Seed Procurement/Treatment Cost					
1.	Annual Rent of land	Acre	1	5,000.00	5,000.00
2.	Land Preparation (including tilling by hired tractor)	L/S	-	-	4,000.00
3.	Seed Treatment through organic Treatment	Person days	5	271.00	1,355.00
4.	Cost of Turmeric seed for 1 Acre land	Kg	800	40.00	32,000.00
				Total (A)	42500.00
B. Cultivation Cost					
4.	Cost of Composting in 1 Acre	Tones	3.75	4,000.00	15,000.00
5.	Mulching	Person days	10	271.00	2,710.00
6.	Weeding and maintenance of crop Field	Person days	30	271.00	8,130.00
7.	Harvesting cost (person days)	Person days	15	271	4,065.00
8.	Plant Protection cost	Lumpsum			6,000.00
				Total (B)	35,905.00
C. Post-harvest Cost					
9.	Cost of cleaning, sorting and grading	Person days	20	271.00	5,420.00
10.	Cost of packing material	Gunny bags	80	50.00	4,000.00
11.	Cost of transportation	L/S			4,000.00
				Total (C)	13,420.00
D. Other Cost					
12.	Crop Insurance (Acre)		1	1,700.00	1,700.00
				Total (D)	1,700.00
E. Cost of Cultivation (A+B+C+D)=			42,500.00+	35,905.00+	13,420.00 +
			1,700.00		93,525.00
F. Yield per Acre (Qtl)					
13.	Yield of Turmeric (after dry loss) per acre	Kg	4,000		
14.	Total Revenue			75.00 per kg (average)	300,000.00
C. Net Return (F-E)= (300,000.00-93525.00)=			206,475.00		

Sustainability

Potential Market	Turmeric will be marketed directly to nearby hat/market /town as it has high demand
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Market Risk	Poor quality of product, small size, colour, lack of information on existing market price of product, , market linkages with potential traders
Impact on Forest, Land and Water, Health	It has got no adverse impact on forest, land and water, activity is hygienic and does not produce health hazard, rather the cultivation is good for soil improvement, adaptive to changing climate. The activity is climate resilient as it can be grown in both landscapes (Hills and North Bengal and Dry Lateritic and Alluvial)
Economic	Farmer with own land or even landless on rented Land can cultivate and earn substantial income by cultivating land for 9-10 months in a year

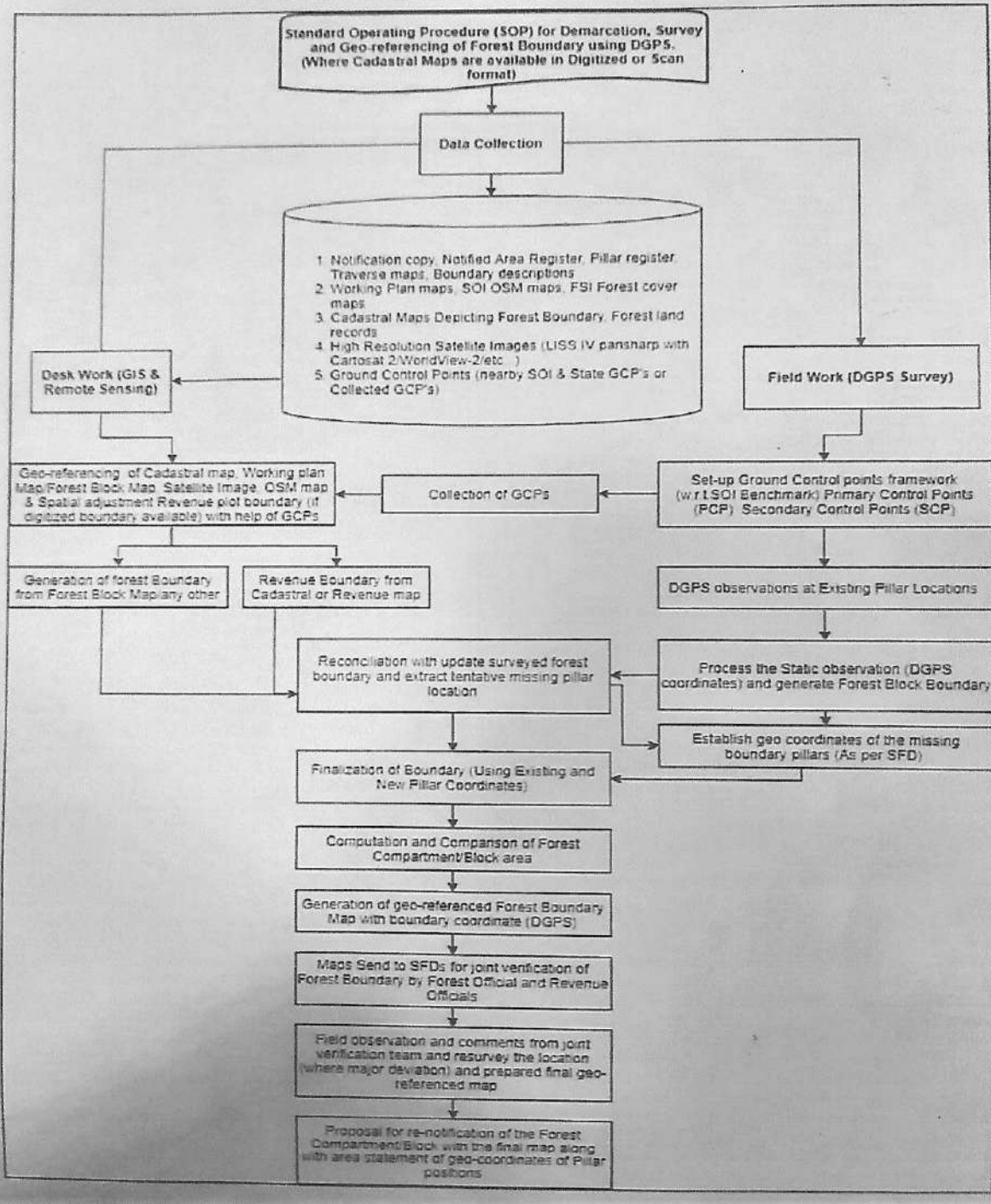
Attachment 8.8.4 Indicative TOR for Extension Worker and Indicative Selection Criteria

Duration of Engagement: 3 Years

Place of Posting: FMU

Position	Extension Worker
No. of Position	1
Qualification	<ul style="list-style-type: none">• Minimum class XII pass.• active member of JFMC.• participated in JFM activities like forest protection, awareness building on nature/forest etc.• good rapport with JFMC members, existing SHG members, local Forest Department officials, local line department officials, panchayat.• Aware of government schemes/programs etc.• preferably have some experience in working with the similar foreign funded or government assisted projects.
Knowledge of Language	<ul style="list-style-type: none">• Fluency in spoken Bengali/Nepali with functional knowledge of English.• Good communication skills• Computer literacy

Flowchart showing overall Methodology



Attachment 8.9.2 Indicative Topics of Specialised Training

(a) Component 1 & 3

Component	Sub-component	Activity	Training Topics	Trainee Category	No of Persons in one Batch	No of Batches to be trained during the project	Duration in Days	Venue/ Location of the Training	No of Resource Persons
1	1.1.3, 1.2.3, 1.3.1	1.1.3, 1.2.3, 1.3.1	Ecosystem based disaster risk reduction and community resilience	forest officers higher than DFO post	30 persons	1	one day	Kolkata/online	(3) Climate change adaptation and adaptation policy and models
1	1,2,3	1,2,3	Catchment treatment plan	forest officers higher than range officer post	30 persons	3	one day	Kolkata/online	(4) Soil erosion, zoning GIS/sarete image analysis, and treatment
1	1.1.2./1.2.2	1.1.2./1.2.2	Working plan prescription	forest officers higher than range officer post	30 persons	5	two day	Kolkata/online	(5) Working plan concept plantation/ conservation/NTFP/JFM/ecotourism
1	1.1.2/1.2.2	1.1.2.3/1.2.2.4	Tree plantation outside of forest area	forest officers higher	30 persons	5	one day	Kolkata/online	(4) methodology, case study (NB, CB and SB)

				than range officer post					
1	1.3	1.3.1	Mangrove: cause of degradation and protection, restoration	forest officers higher than DFO post	30 persons	1	2 days (one day lecture and one day field in Sundarban)	Kolkata/online, Sundarban	(4)status of degradation, community resilience, and plantation tech)
3	3.5	3.5	Community resilience and NTFP/Medicinal plant (status, propagation, market, traditional knowledge etc.)	All forest officers	30 persons	3	one day	Kolkata/online	(4) mechanism, species selection, propagation, market, local healer, etc.)

(b) Component 3 Livelihood Improvement

Component	Sub-component	Activity	Training Topics	Trainee Category	No of Persons in one Batch	No of Batches to be trained during the project	Duration in Days	Venue/ Location of the Training	No of Resource Persons
Component 3 Livelihood Improvement	All Sub Component	3.1.1,3.2.1,3.3.1	Microplanning: Objective, process, approach and methods of microplanning, Use of PRA tools, FGD approach and methods, micro plan formats etc. Followed by on hands field training	Microplanning Team/Women Working Group of JFMC	20	60	2	Respective FMU	3
			Administrative and Financial Management of JFMC: Salient features of JFM resolutions, roles and responsibilities of JFMCs, record keeping, account maintenance, loan management	Selected JFMC members	20	60	2	Respective FMU	2

			Management of SHG/Livelihood Groups: SHG management, financial management/accounting ,microfinance management, various record keeping, enterprise development and business planning :	Executive Committee Members	20	30	2	Respective FMU	2
		3.1,2, 3.2.2, 3.3.2	Training on Sustainable Harvesting: methods and tools of harvesting protocols of key NTFPs	SHG/Livelihood Groups/Individual entrepreneurs selected for NTFP based IGA	20	15	2	Respective FMU	2
			Skill Development Training: value addition/processing of NTFP, management of IGA	SHG/Livelihood Groups/Individual entrepreneurs selected for NTFP based IGA	20	15	5	At specialized institution	3
			Skill Development Training: technical training on medicinal plants cultivation, vegetable farming, backyard poultry/piggery, apiary etc.	HG/Livelihood Groups selected for IGAs	20	30	5	At specialized institution in District/State	3

(c) GIS &
MIS Related

Component	Activity	Sub activity	Training Topics	Trainee Category	No of Persons in one Batch	No of Batches to be trained during the project	Duration in Days	Venue/ Location of the Training	No of Resource Persons
Institutional Strengthening	4.1.1.1 2)	Training of PMU/WP on the operation of Web GIS and associated Mobile App	web GIS	PMU/WP GIS lab staff	10 (officers of PMU, PMC, GIS lab staff)	1	2	PMU	WebGIS developer*
	4.1.1.1 3)	Training of DMUs on the operation of Web GIS and associated Mobile App	web GIS	Officials from DMUs (DFO/Range officers)	20	30(=No. of DMUs)	3	DMU office and On site (Forest area)	1 (PMC MIS/GIS)
	4.1.1.1 4)	Training of FMUs on the operation of Web GIS on Mobile App	web GIS	Officials from FMUs (Range officers/Beat officers)	20	90 (=No. of FMUs)	3	DMU office and On site (Forest area)	1 (PMC MIS/GIS)

	4.1.1.2.2)	Training of DMU and FMU on the operation of GPS, Mobile App	Operation of GPS and Mobile App (e-monitoring and e-plantation journal)	Officials from DMUs and FMUs (DFO/Range officers/Beat officers)	20 (=officers of FMUs+DMU)	30(=No. of DMUs)	2	DMU office and On site (Forest area)	1 (PMC MIS/GIS)
	4.1.1.3.2)	Training of PMU on the operation of MIS and associated Mobile App	Web MIS	PMU	10 (Officers of PMU, PMC)	1	1	PMU	MIS developer*
	4.1.1.3.3)	Training of DMUs on the operation of MIS and associated Mobile App	Web MIS	Officials from DMUs (DFO/Range officers)	20	30(=No. of DMUs)	2	DMU office and On site (Forest area)	1(PMC MIS/GIS)
	4.1.1.3.4)	Training of FMUs on the operation of the associated Mobile App	Web MIS	Officials from FMUs (Range officers/Beat officers)	20	90 (=No. of FMUs)	2	FMU office and On site (Forest area)	1(PMC MIS/GIS)
	4.1.1.4.1)	Training of PMU on the	Potential use of UAV in the forestry sector	PMU	10 (Officers of PMU)	1	0.5		1 (PMC MIS/GIS)

		operations of UAV applications in forestry							
	4.1.1.4.2)	Training of DMU,FMU on UAV operation	UAV operation	Officials from DMUs/FMUs (DFO/Range officers/Beat officers)	3 (field officers from DMU+FMU)	10	3	FMU office and On site (Forest area)	External licensed trainer
	4.1.1.4.3)	Training of DMUs on UAV image process and analysis	UAV Image processing and data analysis	Officials from DMUs (DFO/Range officers)	10 (field officers from DMU+FMU)	same as 4.1.1.4.2)	2	DMU office	External licensed trainer
	4.3.2.3)	Thematic Research: Research compo for application of advanced technology	Advanced technologies available in India for forest field work (survey/monitoring)	PMU	10 (Officers of PMU, PMC)	1	1	PMU	1(PMC MIS/GIS)
			Bitterlich plotless sampling with 360°camera and image analysis	DMU,FMU	10 (field officers from DMU+FMU)	3	2	DMU office and On site (Forest area)	1 External trainer
			Software for Structure from Motion (SfM)	PMU, GIS lab	10 (officers of PMU, PMC, GIS lab staff)	1	2	PMU	1 External trainer
			UAV operatoin for Structure from Motion (SfM)	DMU, FMU	10 (field officers from DMU+FMU)	3	2	DMU office and On site (Forest area)	1 External trainer

(d) Environmental and Social Consideration

Component	Sub-component	Activity	Training Topics	Trainee Category	No of Persons in one Batch	No of Batches to be trained during the project	Duration in Days	Venue/ Location of the Training	No of Resource Persons	No of Resource Persons	Remarks
4	Social and Environmental Consideration		<p>1- Orientation/Sensitization on Env. and Social Consideration</p> <p>-Legal framework on environmental and social safeguards of India and JICA</p> <p>- Environmental and social impact assessment: overview & regulations</p> <p>- Basic introductory concept of safeguard</p> <p>- Safeguard issues (vulnerable groups, SCs, STs, transhumance,</p>	Management/ Administrative Level: (Designated officials of PMU, CCF office)	20-25 (depends on No. of PMU staff)	Once every year for 4 years	2- Days	PMU	2		These trainings are meant for overall project thus not related to only 1-2 specific activity

		<p>Gender, etc.) -Free, Prior and Informed Consent (FPIC) 2-ESAF and its importance under the project -Knowledge and skills necessary for undertaking environmental and social screening and appraisal as per the requirements of the ESAF -Conduct ESA and preparation of management/mitigation plans -ESAF: steps and procedures with respect to the Project 3-Monitoring and Evaluation for Environmental and Social Safeguard -Concept of M&E -M&E - Methods and reporting procedures -Use of M&E Results and</p>							
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			feedback -Grievance Redressal Mechanism -Experience sharing and learning								
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	4 Social and Environmental Consideration	<p>1- Orientation/Sensitization on Env. and Social Consideration - Legal framework on environmental and social safeguards of India and JICA - Environmental and social impact assessment: overview & regulations - Basic introductory concept of safeguard - Safeguard issues (vulnerable groups, SCs, STs, transhumance, Gender, etc.) - Process of community consultation and public participation - Free, Prior and Informed Consent (FPIC) 2-ESAF and its importance under the project</p>	Field/ Operational Level: (Designated officials of DMU, Division, Sub-Division office, FMU)	20-25	Once every year for 4 years in each Division	2-Days	DMU	2	These trainings are meant for overall project thus not related to only 1-2 specific activity
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		<ul style="list-style-type: none"> -Knowledge and skills necessary for undertaking environmental and social screening and appraisal as per the requirements of the ESAF -ESAF: steps and procedures with respect to the Project -PRA for data collection, analysis and report preparation -Micro Planning and Participatory Land Use Planning 3-Monitoring and Evaluation for Environmental and Social Safeguard -Concept of M&E -M&E - Methods and reporting procedures -Environment Health Standards -Use of M&E Results and feedback 							
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			<ul style="list-style-type: none">-Grievance Redressal Mechanism-Experience sharing and learning								
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4	Social and Environmental Consideration		<p>1-ESAF and its importance under the project</p> <p>-ESAF: steps and procedures with respect to the Project</p> <p>-Project Activity Planning during Micro Planning and Participatory Land Use Planning</p> <p>-Participatory ESA Procedures</p> <p>-Working with Ethnic and Vulnerable Groups</p> <p>-Mechanisms for addressing Gender Issues</p> <p>-Conflict Resolution/Grievance Procedures</p> <p>-Role of community level institutions in ESA</p> <p>-Community Level Monitoring</p>	Community Level: (Beat Officials, GP representatives, Village Level Implementing Organisations- JFMC/ED C, Field Facilitators)	25-30	These training sessions can be clubbed with Community Level Trainings	2-3 Hours	FMU or as decided based on the plan of community level trainings	1		These trainings are meant for overall project thus not related to only 1-2 specific activity
4	Social and Environmental Consideration	1.1.1 QPM	-Usage of prescribed quantity of chemical fertilizers/pesticides	DMU,FMU	25-30	Training sessions on these topics be clubbed with	1 hour	DMU office, nurseries	1		

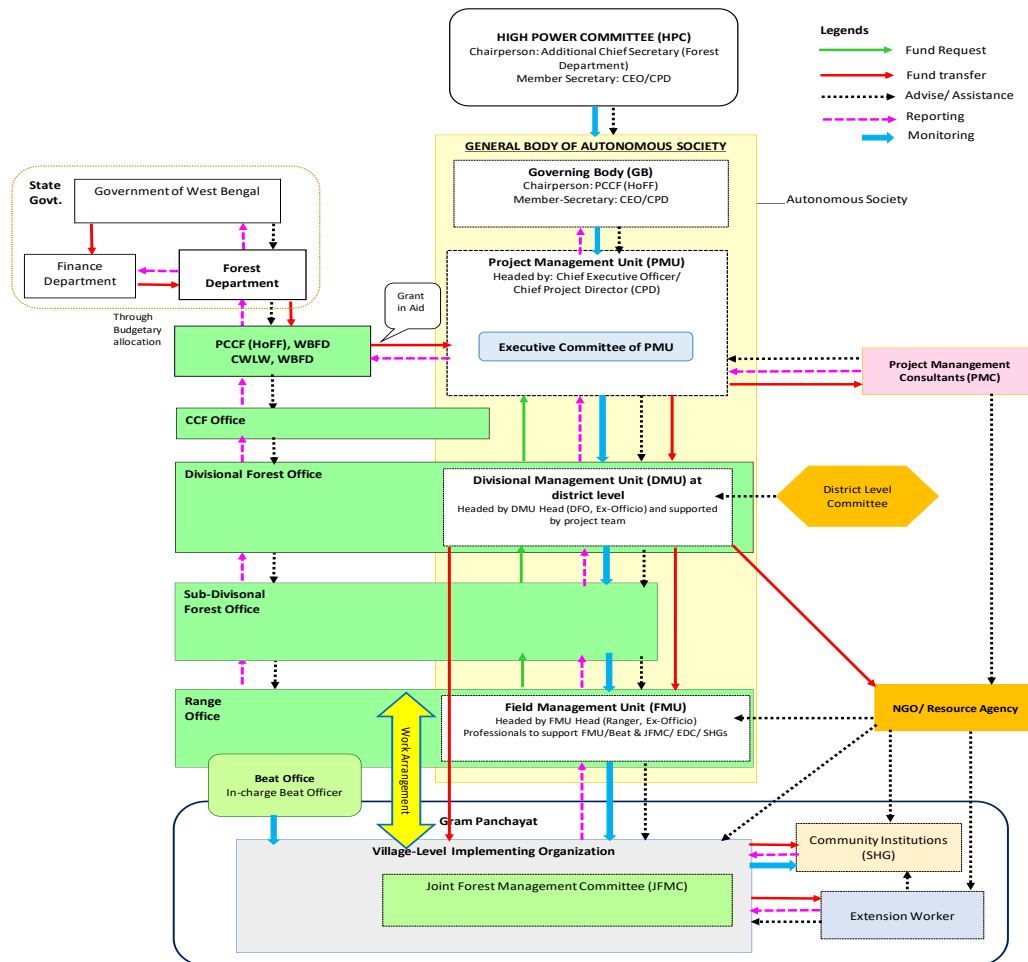
			-Maximum usage of suitable Organic fertilizer/pesticides			training on Nursery / Plantation					
4	Social and Environmental Consideration	1.3. Eco-DRR activities to strengthen forestry operation	-Safety standards for constructions [check Dams]	DMU,FMU in charge of supervision of the contractor	25-30	Training sessions on these topics be clubbed with training on M&E	1 hour	DMU	1		
4	Social and Environmental Consideration	4.1. Building	-Safety standards for constructions -Occupational Health and Safety	DMU,FMU in charge of supervision of the contractor	25-30	- Training sessions on these topics be clubbed with Training on M&E - Also construction contractors need to include a session on the same or	1 hour	DMU	1		

					their workers					
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Attachment 10: Institutional Arrangement

1. Overall Institutional Set Up

One of the key challenges in a project is to design an efficient institutional arrangement to deliver the desired results. The overall goal of the project is to conserve ecosystems in the state by sustainably managing the coastal systems and critical inland ecosystems that includes degraded forests and strengthening measures for human-wildlife conflicts mitigation. For achieving this, the project institutional arrangements were developed considering the project goals, objectives, components / sub-components, and how they will be implemented. The proposed arrangements will enhance institutional capacities of the West Bengal Forest Department (WBFD) and will support in achieving the project results in a defined timeframe while facilitating efficient implementation of the activities planned under the project. In WB-FBCCCR, the institutional framework is primarily based on the Phase 1 arrangements and has been adjusted to the project requirements in consultation with WBFD and harmonised with the regular departmental functioning and systems. Learnings from the on-going Japan International Cooperation Agency (JICA) projects in the country, as well as JICA projects that have been implemented in the past have also been adopted. Views and suggestions from forest officials, JICA Survey Team members, and other stakeholders are also considered for the proposed arrangements. The figure below shows the detailed institutional arrangement envisaged for the implementation of the project.



Source: JICA Survey Team

Figure 1.1 Institutional Arrangements for WB-FBCCCR

The table below shows the detailed key institutions and stakeholders considered for the institutional arrangement.

Table 1.1 Key Institutions/ Stakeholders

Abbreviation	Description	Level
HPC	High Power Committee	State Government
GB	Governing Body	PMU/ Project
EC	Executive Body	PMU/ Project
PMU	Project Management Committee – autonomous society established for the project	WBFD HQ/ Department
PMC	Project Management Consultants	PMU/ Project
DMU	Divisional Management Unit	Division
FMU	Field Management Unit	Range
WBFD	West Bengal Forest Department	State
WBZA	West Bengal Zoo Authority	State
WBBB	West Bengal Biodiversity Board	State
WBFDCL	West Bengal Forest Development Corporation Ltd.	State
JFMC*	Joint Forest Management Committee	Village
SHG	Self-Help Group	Village
NGOs	Non-governmental Organisation	Village/ Range

*Eco-Development Committees are now all recognised as JFMCs.

Source: JICA Survey Team

1.1 Brief Description of Overall Institutional Structure

The Project Management Unit (PMU) that was established during the earlier JICA-assisted project (ID-P223) will continue to operate as an autonomous registered society within WBFD for the new project, and be made responsible to manage, coordinate, implement, and monitor the project activities. All offices created for the new project will exclusively work to assist and facilitate the implementation of the project activities following the project implementation schedule, annual plan of operations, and envisaged processes adopting an Operation Manual. PMU will have a comprehensive Operational Manual that will prescribe guidelines, policies, protocols, procedures and rules on finance, accounting, administration, and management for smooth implementation of the Project (further details are given in 2. (5)).

The High-Power Committee (HPC) will be reconstituted for the project and will act as its highest decision-making body at the state government level and will not form a part of the autonomous society, which is PMU. Similarly, the Governing Body (GB) and General Body of the project will be reconstituted and will be the decision-making bodies for the project within the autonomous society, PMU, as per the provisions in the Societies Registration Act applicable in West Bengal.

To support the project implementation at the field level, PMU will coordinate with a set of offices, viz., District Management Units (DMUs) and Field Management Units (FMUs), as those will work as the extended arms for PMU as in the earlier JICA-assisted project (ID-P223). The concerned Beat Office under FMU will work as a link office for FMU and maintain contacts between the project and village level institutions such as Joint Forest Management Committees (JFMCs) and Self-Help Groups (SHGs). FMUs/ Beat Offices are in proximity with JFMCs and thus, in WB-FBCCCR, shall be strengthened for efficient coordination and follow-up/ supervision by placing necessary human resources. PMU would also evolve mechanism for tracking the project implementation, reporting, and fund flow, for the interventions where DMUs/ FMUs are not created. In addition, as part of project design, PMU will also be supported by a team of professionals engaged by PMU as Project Management Consultants (PMC). PMU, including DMUs and FMUs, will assist and assume facilitating roles for project implementation and will source funds as per the institutional arrangements. The main responsibility of the project implementation units established at each level will remain with the regular structure of the Forest Department, and in no way the project offices created within the autonomous society will duplicate or substitute the roles and responsibilities of the Forest Department. The existing divisional/ sub-divisional and range offices will operate within their respective jurisdictions to facilitate project implementation. For steering the wildlife/ biodiversity interventions planned under the project, the Chief Wildlife Warden will extend support, and will be responsible for implementing the annual plans.

At the state level, one PMU will be established and 34 DMUs and 90 FMUs will be created across the landscape, which has been summarised in the table below.

Table 1.2 Key Project Implementation Units (DMUs and FMUs) to be Established in Each Landscape

Landscape	Territorial		Wildlife		Social Forestry		Total	
	DMU	FMU	DMU	FMU	DMU	FMU	DMU	FMU
Hills and North Bengal	6	13	5	9	1	1	12	23
Dry Lateritic and Alluvial	14	57	0	0	0	0	14	57
Deltaic	2	2	1	3	0	0	3	5
Total	22	72	6	12	1	1	29	85
Functional*							5	5

* Includes Purulia Extension Division that will be responsible for Tree Planation outside Forest Area (TPOFA) activities; other functional DMUs will be with Silviculture (North), Silviculture (Hills), Monitoring (North), and Monitoring (South)

Source: JICA Survey Team

As required, non-governmental organisations (NGOs)/ Specialised Agency will be engaged by PMU/ DMU to support DMUs and FMUs, while a set of professionals will be engaged to support FMUs and village level institutions in field implementation. Village level institutions will also be supported by field facilitators/ extension worker, to be identified within the respective project villages by the village level institutions/ FMUs.

The village level institutions (JFMCs) will be involved during community mobilisation and micro planning processes and will be shared with project information to build rapport, and bring in more synergy, ownership, and transparency in project operations.

For facilitating convergence, the project teams at respective levels of operations will coordinate with the state/ district administration and line departments as well as block development office. At the district level, District Planning Committee (DPC) will be the institutions to facilitate convergence and coordination. These institutions are already functional under the district development mechanism. The DPC is chaired by the District Collector (DC)/ District Magistrate (DM), while BAC is chaired by the Block Development Officer (BDO). The statutory institutions – Gram Panchayats will be involved during community mobilisation and planning processes and will be shared with project information to bring in more synergy and transparency in project operations.

At the start of the project, WBFD by way of notification, will have a formal arrangement to vest the project management responsibilities to society (i.e., PMU), and after project completion, WBFD will own the responsibility of assets and institutions created under the project to further support and maintain under routine Forest Department functioning. Later on, two years prior to completion, a phase-out plan will be developed and agreed between the two entities.

2. Key Managerial Features of Institutional Arrangement

The following are key managerial features to be adopted and adhered by PMU – as a society, and by WBFD/ state to make the institutional arrangement effective, and to function within the framework of government systems.

(1) Budgetary Provision

WBFD will take all necessary measures to secure the funds required for the smooth implementation of the project, and there will not be any delay in implementation due to insufficient budgetary provisions of the annual project cost including state share. For fund allocations, a sub-budget line already created

in the state budget of WBFD during the earlier JICA-assisted project (ID-P223) could be utilised for this project as well.

(2) Auditing

According to the Society Registration Act, 1961 applicable in West Bengal, a society is required to have a statutory annual audit conducted by a Chartered Accountant (CA) and passed in the GB meeting annually. Thus, annual statutory audits by CA will be carried out for the accounts of PMU and may further investigate the project accounts in the other operational levels as required. To establish internal financial discipline and control, internal audits (concurrent audits) will be instituted by PMU – quarterly or biannually. Such internal audits (concurrent audits) will be regularly reviewed by GB of PMU. As per JICA requirement, PMU will furnish a certified copy of the balance sheet duly audited by the appointed CA within six months after the close on the financial year on 31 March each year.

If the financial procedures under the West Bengal Financial Rules, 18 April 1979, requires that the state grants extended to any registered society from the consolidated funds of state are liable to the Comptroller and Auditor General (CAG) audits, in such case, CAG audits will also be instituted for the project funds.

(3) Compliances of General Financial Rules and General Rules of Business

In order to have smooth compliances with the General Financial Rules (GFR) and General Rules of Business (GRB) of the Government of West Bengal, the PMU must induct an experienced Finance Officer who has exposure and orientation of managing externally-aided funds. In case the state government is not able to provide such eligible officer, an equally competent and experienced person from the WBFD could be deputed.

The personnel in position will facilitate the submission of Statement of Expenditures (SOEs) to JICA through Central Aids, Accounts and Audit Division (CAAA) under the Ministry of Finance, Department of Economic Affairs (DEA), and Ministry of Environment, Forests and Climate Change (MoEF&CC), and to the state government. S/he will ensure better coordination with the state Finance Department for smooth project implementation, as well as with CAAA and JICA for getting clearance on reimbursement claims on a timely manner.

(4) Fund Flow and Accounting Procedures

As per institutional arrangement, the funds received by WBFD from the state will be given to PMU as grants for each financial year. Similarly, PMU will further provide the funds to DMUs that will further be given to FMUs, and JFMCs – the key implementing institutions. PMU will have no rights to divert the funds received for the project for any other purposes or other projects.

PMU will utilise a bank account exclusively for the project and will be managed by a Chief Executive Officer (CEO)/ Chief Project Director as per the by-laws and rules and regulations of the society. The PMU will ensure to adopt a unified accounting procedure based on double accounting system at all levels. PMU will also create finance and accounting procedures for the project and adopt it within the first six months of its operation.

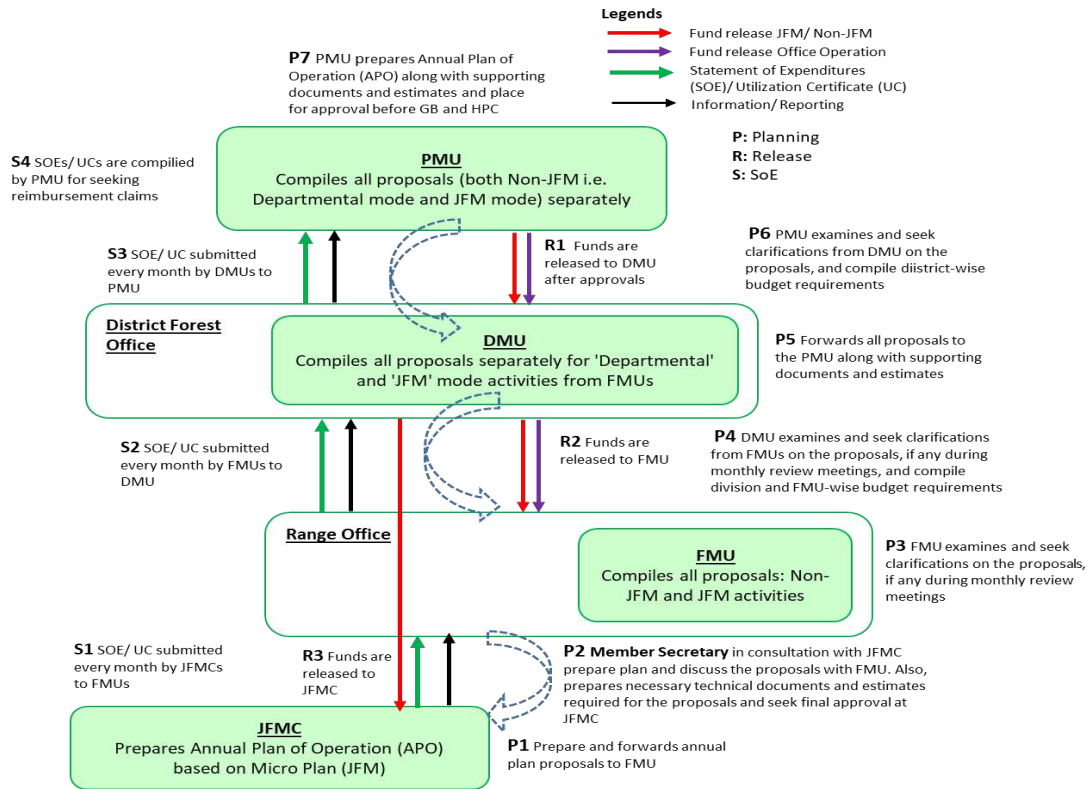
To receive project funds, DMUs, FMUs, and village level implementing units, viz., JFMCs, will operate separate bank account(s), preferably in the nationalised banks for the purpose of the project. The funds from the project account with PMU will regularly go to the designated project bank accounts with DMUs as per the annual plan of operation (APO) on a quarterly or semi-annual basis following the guidelines and procedures mentioned in the Operation Manual. This is done by utilising any of the available banking transaction options. DMUs will further provide the funds to FMUs for the ‘department’ mode (non-JFM) activities, whereas the funds for ‘JFM’ mode will directly go from DMU to the village-level institutions JFMCs project accounts upon the advice of FMUs without delays according to the respective APO. The table below provides the system of fund flows.

Table 2.1 Fund Flow and Control System for the Proposed Institutional Arrangements

Steps	Fund Request Initiator	Control System	Fund Release Authority	Fund Recipients	Nature of Fund	SOE/ Utilisation Certificate Issuance	SOE/ Utilization Certificate Submission
1	PCCF (HoFF), WBFD	Annual Budget allocation (line item)	Finance Department, State Government	WBFD	Budget from consolidated funds	WBFD	State Finance Department
2	PMU	Annual Plan of Operation (APO)	WBFD	PMU (Society)	Grant-in-Aid	PMU	CAAA (DEA)
3	DMU	Advice Note based on the annual plan	PMU	DMU	Grant-in-Aid	DMU	PMU
4	FMU	Advice Note based on the range plan	DMU	FMU	Grant-in-Aid	FMU	DMU
6	JFMC	Advice Note based on the beat and micro plan	DMU	JFMC	Grant-in-Aid & Block Grant	JFMC	Beat Office/ FMU
7	SHG	Business Plan/ Annual Plan	JFMC	SHG	Loan/ Grant	JFMC	JFMC

Source: JICA Survey Team

The process of putting forward budget request, fund flow, and submission of SOEs/ Utilisation Certificates (UC) by various levels, spending the project funds will need to be well established (Please refer to the figure below). If required, sufficient capacity will be built for the relevant project staff.



Source: JICA Survey Team

Figure 2.1 Fund Flow and Planning and SOE Submission

(5) Project Operation Manual (POM)

PMU will review the existing Project Operation Manual (POM), and if required, will adjust and modify it based on the project requirements and institutional arrangements during the preparatory phase of the project. POM will prescribe guidelines, policies, protocols, procedures, and rules on finance, accounting, administration, and management for smooth implementation of the project.

POM will necessarily include policies on gender and differently abled persons and checklists to ensure the policies are implemented in the project. POM will convey the internal policy of PMU to manage the project and will be approved first by the GB and subsequently by HPC during the first year of operations of the project prior to adoption. A policy on the revolving fund system to support the timely implementation of the project shall also be included in POM. PMU will evolve and include mechanism for tracking the project implementation, reporting, and fund flow, for the project interventions in POM. If a need arises, the approved POM could be reviewed by PMU at mid-term of the project (after 4th year), and the amended one could be utilised for the remaining project period. JICA will be informed for such amendments in POM.

(6) Annual Plan of Operation (APO)

PMU will prepare APO for each financial year starting from the first year, and get it approved by HPC prior to commencement of new financial year. PMU will provide guidelines for its preparation and will facilitate and capacitate the project staff at all levels. PMU will also make efforts to ensure that the plans are prepared in a timely manner through a consultative process starting from the lowest level of project implementation.

(7) Structural Integrity

The basic purpose of the society (PMU) is for the implementation of JICA-assisted project, and thus, there is no intention of creating a dual administrative structure within the forestry sector in the state. The existing charges and authorities of WBFD will remain intact regardless of the existence of PMU as an autonomous society. In this case, the function of PMU ceases after project completion, and the assets and infrastructure created under the project will be transferred to WBFD, or any other institution as

decided by the state government through provisions in the by-laws of the society as well as following the Phase Out strategy agreed with the WBFD/ state government. This will ensure the organisational integrity of PMU as a society within the WBFD.

(8) Procurement

Procurement of goods and services for the project shall be implemented in accordance with the “Handbook for Procurement under Japanese ODA Loans” dated April 2012 and selection of consultants shall be in accordance with the “Guidelines for Employment of Consultants under Japanese ODA Loans” dated April 2012 and applicable GOI guidelines.

PMU may make use of Government e Marketplace (GeM), a dedicated e market for different goods and services procured by government organisations/ departments/ public sector undertakings. The purchases through GeM by government users have been authorised and made mandatory by the Ministry of Finance by adding a new Rule No. 149 in the General Financial Rules, 2017. As applicable, the state procurement rules could also be adopted, but JICA’s guidelines shall overrule whenever such procurement rules are in conflict.

The procurement plan for the first year of the project implementation has been indicated in the Project Implementation Plan. The procurement plan will be updated at least annually or as required, to reflect the actual project implementation needs and improvements in institutional capacity.

In case vehicles are not procured, the allocations for mobility could be utilised for hiring vehicles during the project implementation period.

(9) Operation and Maintenance of Infrastructure/ Assets

PMU will evolve operation and maintenance (O&M) strategy during the phase-out period at least two years prior to the completion of the implementation period. The strategy on O&M will be reflected as a policy document through which funds could be secured annually accessing CAMPA funds or other sources to undertake regular O&M for all the infrastructure, buildings, and assets created under the project. The project allocations under the Community Infrastructure Development for asset creation at the village level will earmark 5% within the allocation, for O&M of assets by the community institutions, viz., JFMCs. The guidelines based on the approved policy will be published and disseminated amongst stakeholders, to facilitate access to O&M funds.

(10) Revolving Fund for Income Generation

PMU will develop an elaborated policy and system of assessment and utilisation of revolving funds passed on to the community institutions, viz., JFMCs as one-time block grant to support income generation activities by the SHGs under the project. The policy will also define how the interests earned out of such revolving funds shall be utilised. The guidelines based on the approved policy will be published and disseminated amongst stakeholders, to facilitate access to these funds.

(11) Inter-sectoral Convergence: District Planning Committee (DPC)

Inter-sectoral linkages will be ensured through the existing institutions in place at state, district, and block levels. The 73rd and 74th Constitutional Amendment Act mandated to establish DPCs for consolidating plans prepared by Gram Panchayats and urban local bodies in the district into the draft district plan.

The idea is to strengthen existing institutional mechanism rather than creating an additional system at the district. DFO in a division is already coordinating with district administration on a regular basis for issues related with the Forest Conservation Act (FCA), Forest Rights Act (FRA), forests related issues, MGNREGS program, etc.

Adopting the system in place for inter-sectoral linkages, PMU at the state level will coordinate with the Planning Department; whereas, at the district level, the forest officer at the division level will assist and coordinate with the steering committee chaired by the District Collector. The officer at the DMUs will closely coordinate and interact with the district administration for inter-sectoral convergence. Micro plans will be shared with the district level steering committee for seeking convergence. Similarly, officer at FMUs will assist and coordinate with the Block Level Planning Committee whose Member-Secretary is the Block Development Officer.

Monitoring meetings for inter sectoral convergence shall be held once in six months by the HPC, once in three months by the district collector and on a monthly basis by the BDO. Necessary instructions in this regards shall be issued by the state government to make this monitoring system functional.

3. **Project Institutional Arrangements**

The institutional arrangements are being proposed to strengthen the project effectiveness and efficiency to deliver the results in a timeframe. The structure that was created for the earlier JICA project, viz., West Bengal Forest and Biodiversity Conservation Project (WBFBP) (ID-P223), has been adhered, but the composition of these institutions and roles will be adjusted in the context of the project goal and objectives.

The key institutions at the state level will be A) HPC, and B) PMU, under the society framework that will constitute of GB, Executive Committee (EC), and the General Body.

(1) **High-Power Committee (HPC)**

HPC for the project will be freshly constituted and established within the state government prior to the initiation of the project implementation. HPC will act as the highest decision-making body for policies, inter-departmental coordination, and convergence for the project. HPC will remain outside the autonomous structure of the society and will support and guide the project at the state level.

The Additional Chief Secretary Forests/ Principal Secretary Forests will chair HPC meetings, while secretaries and heads of line departments will be members to the committee, whereas the Chief Project Director (CPD) will be the Member-Secretary. As per the current responsibilities within the state government, the composition of HPC is given in the following table.

Table 3.1 Composition of High-Power Committee (HPC)

Sl. No.	Position in HPC	Position in the Institutions
1.	Chairperson	Additional Chief Secretary Forests/ Principal Secretary Forests, GoWB
2.	Member	Principal Chief Conservator of Forests (HoFF), WBFD
3.	Member	Chief Wildlife Warden/ PCCF (Wildlife), WBFD
4.	Member	Principal Secretary (Science and Technology and Biotechnology), GoWB
5.	Member	Principal Secretary (Disaster Management and Civil Defence), GoWB
6.	Member	Principal Secretary (Finance), GoWB
7.	Member	Principal Secretary (Micro and Small-Scale Enterprises and Textiles), GoWB
8.	Member	Secretary (Self Help Group and Self-Employment), GoWB
9.	Member Secretary	Chief Project Director
10.	By invitation – as required from time to time	
11.	Special Invitee	Representative of Research Institutions/ Specialised Agencies
12.	Special Invitee	Representative of GoI/ MOEF&CC
13.	Special Invitee	Representative of JICA, India

Source: JICA Survey Team based on discussion with WBFD

(a) **Frequency of Meeting and Representation**

HPC will meet at least once in six months or more frequently if the situation arises in a year, particularly during the preparatory phase of the project. In case the members are not available on the day of HPC meeting, they may nominate senior rank officers in the state government/ state department as their representatives to attend the meetings with authorisation for decision making.

(b) Agenda Circulation and Quorum

A minimum of 2/3rd members will form the quorum for HPC meetings. Agenda of the meeting and proposals will be circulated by the Member-Secretary well in advance to all members, at least seven days ahead of the meeting date. The proceedings of HPC meetings will be circulated to all the members/ attendees within reasonable timeframe, after the meeting is concluded.

(c) Roles and Responsibilities

HPC will regularly oversee and review the performance of the project implementation and will be responsible for giving directions to PMU for ensuring smooth and efficient project implementation. HPC will pursue the matters relating to policy with the state government, and also facilitate inter-departmental coordination and convergence. HPC will also be responsible to facilitate coordination amongst various line departments of the state and other agencies to help achieving the project goals. The roles and responsibilities of HPC will be as follows:

- Approve the Operation Manual including the Financial Rules and Accounting Procedures, policies and guidelines on gender mainstreaming, differently-abled persons, and revolving fund;
- Endorse APO and annual budget of the project;
- Advise/resolve issues and problems related to financial flow from GoWB to project, and with other government departments that are detrimental to the success of the project;
- Facilitate convergence and coordination of project with other government departments;
- Suggest and endorse measures and actions to resolve issues raised by JICA, DEA, MOEF& CC or any other agencies related to the project; and
- Take up policy related matters of the project.

HPC will approve annual plans and budgets of the project at the beginning of each financial year and review progress of the project at least every-six months on a regular basis. HPC will accord administrative and financial approvals/ sanctions of all individual schemes, and proposals or procurement of goods and services amounting to INR 20 million and above.

Post-Coronavirus Disease 2019 (COVID-19), the digital interface has been strengthened at all levels of operation. If circumstances require, online meetings could be conducted. In any case, a member who is not able to attend a meeting in person could also be given a choice to join online. This will be applicable to HPC, and all other meetings to be conducted under the project.

(2) Project Management Unit (PMU) – Society Mode

For efficient management of a time-bound project, it is very important to have efficient flow of funds, or else implementation may suffer delays, and because of such delays, the desired results may take a little longer time or may not be satisfactorily achieved within the given time-frame and resources.

Thus, to have efficient flow of funds as per the annual plans, and for timely submissions of SoEs for reimbursement claims, adequate authority has to be entrusted with the project personnel who are made responsible for managing and implementing the project activities.

(a) Restructuring of the Society: Project Management Unit (PMU)

The society formed under the earlier JICA-assisted project (ID-P223), will be restructured to address and respond to the requirements of the new project following the specified procedure prescribed in the Societies Registration Act, as applicable in West Bengal, and make necessary changes and amendments in the name of the society, by-laws, memorandum of association, and constitution of GB and General Body. The by-laws shall include the clause on the amalgamation/ dissolution of society and asset transfer after the project completion, if required.

The by-laws of the society will specify the frequency and the manner in which the meetings of GB and General Body shall be held. GB will meet at least once in every three months, whereas, the General Body will meet at least once in a financial year. Provision for convening special General Body meetings should also be made.

As shown in Figure 9.1.1, WBFD, being the executing agency, will first receive funds from the state government through budgetary provision and pass these funds without any delay on to the society (PMU

– implementation unit). WBFD will also be committed to support project implementation through various established offices located at state, divisions, sub-divisions, range, beats, etc., as per administrative structure of the Forest Department.

(b) Management of the Society: Project Management Unit (PMU)

As per the Societies Registration Act, management of society will be vested with GB that exercise and functions as may be conferred or imposed by the Act, the rules, or the bylaws. The society will have the General Body that will include all members of the society.

(c) Governing Body (GB)

GB will be the highest decision-making body within the society. The composition of GB is given in the following table.

Table 3.2 Composition of the Governing Body

Sl. No.	Position in GB	Position in the Institutions
1.	Chairperson	Principal Chief Conservator of Forests (HoFF), WBFD
2.	Vice Chairperson	PCCF (General), WBFD
3.	Member	Chief Wildlife Warden/ PCCF (Wildlife), WBFD
4.	Member	PCCF (RMD), WBFD
5.	Member	PCCF CEO, CAMPA, WBFD
6.	Member	PCCF MD, WBFDC
7.	Member	APCCF (Finance), WBFD
8.	Member	APCCF (HRD), WBFD
9.	Member	APCCF (North Bengal), WBFD
10.	Member	Chief Environment Officer, Department of Environment
11.	Member	Member Secretary, West Bengal State Biodiversity Board (WBSBB)
12.	Member Secretary	Chief Project Director
13.	By invitation – as required from time to time	
14.	Special Invitee	Representative of Research Institutions/ Specialised Agencies
15.	Special Invitee	Member Secretary, West Bengal Zoo Authority
16.	Special Invitee	Representative of PMU
17.	Special Invitee	Representative of Consulting Services/ Team Leader (PMC)

Source: JICA Survey Team based on discussion with WBFD

i) Frequency of Meetings

GB will meet at least once every quarter (starting April) in a year, or more frequently, if the situation arises, particularly during preparatory phase of the project.

ii) Agenda Circulation and Quorum

A minimum of 2/3rd members will form the quorum for GB meetings. The agenda of the meeting and proposals will be circulated by the Member-Secretary well in advance to all members, at least seven days ahead of the meeting date. The proceedings of GB meetings will be circulated to all the members/ attendees within reasonable timeframe, after the meeting is concluded.

iii) Roles and Responsibilities

GB will rigorously review the project progress vis-à-vis annual plans and will also monitor the status of disbursement. It will review the functioning of PMU (society) regularly and guide PMU to prepare proposals for HPC, whenever necessary, for the smooth implementation of the project. The key roles and responsibilities of GB will be as follows:

- Play a supportive role to PMU functioning and ensure smooth project implementation;
- Empower PMU to disburse funds for project implementation as per annual plans, as well as delegate financial authority to the Chief Project Director required for day-to-day functioning;
- Guide and approve/ endorse the Operations Manual for the project, and forward it to HPC for final approval;
- Endorse APO and annual budget, which is approved by the Executive Committee, and forward it to HPC for final approval;
- Monitor physical and financial progress of the project regularly;
- Appoint an auditor for the Society (PMU);
- Approve contractual posts, remuneration, and allowances etc., submitted by the Executive Committee.

As per annual plans, GB may accord administrative and financial sanctions of all individual schemes, proposals or procurement of goods and services amounting to INR 5 million and above, not exceeding INR 20 million.

(3) General Body

The General Body will be a decision-making body of the society on all matter as required under the Societies Registration Act, applicable in the state. The General Body of the society will comprise of the members of the GB, Chiefs, and Conservators for the project areas, and all DMUs and other key stakeholders. The General Body will meet once in a year to conduct the Annual General Meeting (AGM) of the society. Proceedings of AGMs will be circulated to all the members/ attendees within reasonable timeframe, after the meeting is concluded.

(4) Executive Committee (EC)

Since the GB of the society will meet mostly on a quarterly basis, it will be essential to have institutional arrangements in place to efficiently manage the day-to-day operations that can also ensure shared, collective, and quick decision making, as well as closer supervision, guidance, and follow-ups. Thus, GB may entrust day-to-day responsibilities with EC that may be constituted at the state level within PMU. The composition of the Executive Committee is given in the following table.

Table 3.3 Composition of Executive Committee

Sl. No.	Position in EC	Rank of Officers and Department
1.	Chairperson	Chief Project Director
2.	Member	All Project Directors
3.	Member	All Additional Project Directors
4.	Member	All Joint Project Directors
5.	Member Secretary	Additional Project Director (Finance and Accounts)
6.	By invitation – as required from time to time	
7.	Special Invitee	Representative of Consulting Services/ Team Leader (PMC)

Source: JICA Survey Team based on discussion with WBFD

Additional Project Director (Finance and Accounts) will act as the Member-Secretary of EC and be responsible for circulation of agenda and organising EC meetings as per the requirements and instructions from the Chief Project Director. Other key project staff or PMC representative may participate as ‘Special Invitees’ in EC meetings for providing insights and/or to share views or concerns in the interest of the project implementation.

EC will keep track of the project implementation regularly, and will be responsible to guide, issue instructions, guidelines and manuals, undertake or facilitate procurement, execute capacity development plan, maintain and operate M&E, GIS/ MIS and accounting systems, undertake field visits, bring out publications to highlight achievements, disseminate project information, maintain

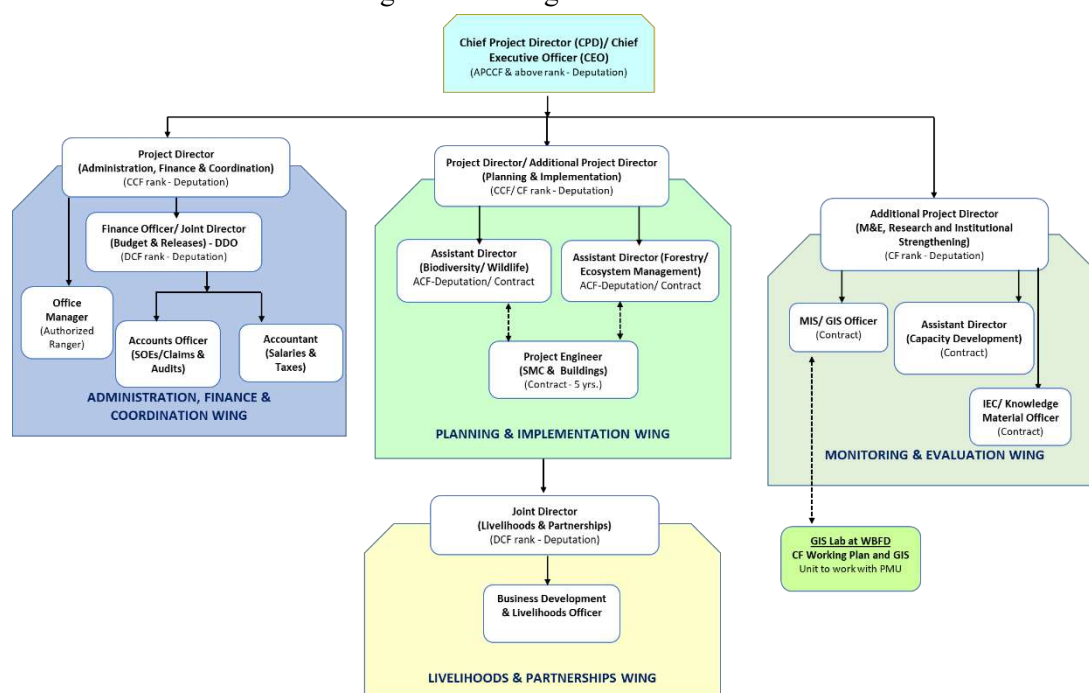
project website, and provide-hand holding support in field, in almost all respect to ensure efficient implementation of the project.

EC will also be responsible for timely submitting reimbursement claims, and institute concurrent audits as well as statutory audits on a regular basis.

A designated officer in PMU will systematically maintain records of all meetings (HPC, GB, EC, and AGM), and will make it available to reviewing authorities as per requirements. Falling in line with the authorities entrusted by GB, EC may accord administrative and financial sanctions of all individual schemes, proposals or procurement of goods and services not exceeding INR 5 million.

3.1 Structure of Project Management Units (PMU)

The autonomous society, i.e., the PMU will be headed by the Chief Project Director (CPD) in the rank of APCCF or above. S/He will also act as CEO of the society and will chair the EC of the society. S/he will be Member-Secretary to GB of the society as well as to the HPC constituted for the project at the state level. The structure of PMU is given in the figure below.



Source: JICA Survey Team

Figure 3.1 Institutional Structure of the PMU

At the state level, CPD will be supported by a team of officers and professionals that will include Project Directors in the rank of CCF, Additional Project Directors in the rank of CF, Joint Directors in the rank of DCF, Assistant Directors in the rank of ACF, Finance Officer, Project Engineer, MIS and GIS/ Remote Sensing professionals and support staff including accountants and ministerial staff. To augment various skill sets, PMU will further be supported by a team of experts constituted as the Project Management Consultants (PMC). The existing MIS and GIS facility with WBFD, that was supported under the earlier JICA-assisted project (ID-P223), will be further strengthened, and supported.

As a part of the society, PMU will also establish DMUs and FMUs that will work as extended arms of PMU, and support project implementation and supervision while working along with the departmental functions, and with JFMCs and SHGs as well.

PMU will manage the project funds, extend funds to the implementing units, guide and supervise project implementation to achieve results within stipulated timeframe adopting the prescribed processes, collate and consolidate the expenditure statements from district and field offices, and prepare SOEs for getting reimbursement of claims from JICA. PMU will also make annual plans to execute the project works in desired manner.

The officers in PMU will either be on deputation from the State Forest Department/ other government organisations for a minimum of three years or as per existing deputation tenure specified in government rules, or directly hired on contract from the open market or recruited through a qualified and reputable placement/ government outsourcing agency. PMU will adopt the existing government orders on outsourcing staff for ministerial staff (computer operators, drivers, security/ utility persons, etc.). Female candidates will be encouraged by PMU to join at different operational levels of the project. The composition of PMU will be as follows:

Table 3.4 Proposed PMU Staffing

Sl. No.	Position	Rank	Mode	Source	Engagement	Qty	Remark	Share
Key Staff						16		
1	Chief Project Director	APCCF & above	Deputation	SFD	Full Time	1		NE
A. Administration, Finance & Coordination Wing						5		
2	Project Director	CCF	Deputation	SFD	Full Time	1		NE
3	Finance Officer/ Joint Director	DCF	Deputation	SFD	Full Time	1	Sometimes arranged by State Finance Deptt.	NE
4	Accounts Officer		Contract	Retired Government Servant	Full Time	1	Chartered Accountant	E
5	Authorized Range Officer		Contract	Retired Government Servant	Full Time	1		E
6	Accountant		Contract	Open Market	Full Time	1		E
B. Planning & Implementation Wing						4		
7	Project Director/ Additional Project Director	CCF/ CF	Deputation	SFD	Full Time	1		NE
8	Assistant Director	ACF	Deputation/ Contract	SFD	Full Time	2		NE
9	Project Engineer		Contract	Open Market	Full Time	1	for initial 5 yrs.	E
C. Monitoring & Evaluation Wing						4		
10	Additional Project Director	CF	Deputation	SFD	Full Time	1		NE
11	Assistant Director		Contract	Open Market	Full Time	1		E
12	MIS/ GIS Officer		Contract	Open Market	Full Time	1		E
13	IEC/ Knowledge Material		Contract	Open Market	Full Time	1		E
D. Livelihoods & Partnerships Wing						2		
14	Joint Project Director	DCF	Deputation	SFD	Full Time	1		NE
15	Business Development & Livelihoods Officer		Contract	Open Market	Full Time	1		E
Supporting Staff						13		
23	Office Assistant			Outsourcing	Full Time	4		E
24	Multiutility Person			Outsourcing	Full Time	3		E
25	Drivers			Outsourcing	Full Time	3		E
26	Security Staff			Outsourcing	Full Time	3		E
Total Staffing						29		
	SFD					8		
	Open Market					8		
	Outsourcing					13		
	Eligible (E)					21		
	Non-eligible (NE)					8		

Source: JICA Survey Team

Tentative responsibilities for the key staff positions in the PMU is given in the following table.

Table 3.5 Responsibilities of Key Staff in Project Management Unit (PMU)

	Position	Rank	Nr	Key Responsibilities	Remarks
Key Staff					
1	Chief Project Director (CPD)	APCCF and above	1	Overall technical, financial, and administrative authority; Ensure Time-Bound Action Plan and overall Project Implementation Plan; Organise meetings of Executive Committee, GB, HPC, and inter-sectoral convergence meetings; Annual budgets, releases and reimbursement claims	Full Time; on deputation from WBFD for a minimum of three years
A. Administration, Finance and Coordination Wing					
1	Project Director (Administration, Finance and Coordination)	CCF	1	Overall supervision, administration and finance aspects; Managing contracts – human resources, outsourcing, procurement of goods and services; Contract management, annual budget and releases, expenditure; Claims and fund disbursement, facilitate statutory and concurrent audits;	Full Time; on deputation from WBFD for a minimum

	Position	Rank	Nr	Key Responsibilities	Remarks
				RTI and grievance redressal issues; In addition, will assist CPD to prepare agenda for EC, GB, HPC, and AGM meetings.	of three years
2	Finance Officer/ Joint Project Director (Budget and Releases) - DDO	DCF	1	Coordinate with DMUs and FMUs, and other key stakeholders, assist APD in project works, establish financial control systems and project accounting systems, monitor financial progress and expenditures, implement accounting software based double-entry system; Oversee accountants, ensure timely budgets and releases, capacity development of stakeholders.	Full Time; On deputation from WBFD or State Finance Department for a minimum of three years
3	Accounts Officer (SOEs/ Claims and Audits)	Manager	1	Assist in day-to-day accounting activities and establish financial management protocols; prepare and maintain SOEs; Prepare claims for submission to CAAA/ JICA; Reconciliation of annual budgets and disbursements; Facilitate and assist statutory audits, conduct/ supervise internal/ concurrent audits, coordinate with DMUs, FMUs, and other stakeholders.	Full Time Chartered Accountant; Open Market
4	Authorized Range Officer	Manager	1	Assist in logistics and protocols; O&M of vehicles, office, equipment, security, store; organising meetings and events; Manage communications, document, and maintain proceedings, letters, all records, and contracts.	Full Time; Open Market
5	Accountants (Salaries and Taxes)	Clerical Staff	1	Assist in day-to-day accounting activities; Prepare and maintain salary/ remunerations details and payments; Computation and deposit of taxes; Assist audits	Full Time; Open Market
B. Planning and Implementation Wing					
1	Project Director/ Additional Project Director (Planning and Implementation)	CCF/ CF	1	Overall planning and implementation of interventions for forest management and biodiversity, catchment protection, guide on microplanning, budget and approvals, plan for biodiversity/ ecosystems conservation; Annual plans and operationalising JFM and Non-JFM Models and technical guide on interventions, supervision, and coordinate with DMUs. FMUs and other stakeholders	Full Time; On deputation from WBFD for a minimum of three years
2	Assistant Director (Biodiversity/ Wildlife)	ACF	1	Assist in annual planning and implementation of biodiversity conservation including human wildlife conflict management, eco-development and ecotourism, micro planning, guide on habitat improvement, guide on establishing ecotourism development organisation; Destinations, design templates, guidelines and manual, monitoring and reporting and	Full Time; On deputation from WBFD for a minimum of three years or

	Position	Rank	Nr	Key Responsibilities	Remarks
				capacity building; coordinate with other stakeholders.	on contact post retirement
3	Assistant Director (Forestry/ Ecosystem Management)	ACF	1	Assist in overall planning, coordination and implementation of interventions for forest management, ecosystem management in hills and plains of North Bengal, dry lateritic and deltaic zones, creation of seed production areas, guide on microplanning, guide on preparing manuals and guidelines; Assist in annual planning and operationalising JFM and Non-JFM Models; Coordinate with nurseries for raising need-based species and supplies, guidance on model layouts and techniques and on maintaining plantation and nursery journals, guide on designing templates, capacity building, monitoring and reporting, and coordinate with other stakeholders.	Full Time; On deputation from WBFD for a minimum of three years or on contact post retirement
4	Project Engineer (SMC and Buildings)	Manager	1	Assist in designing and preparing site specific estimates for SMC structures and buildings/ infrastructure, technical guidance for site selection, construction supervision, quality check, preparing technical specifications for tendering and assist procurement of contractors, coordinate with stakeholders.	Full Time; Open Market; for the first five years of the project
C. Monitoring & Evaluation Wing					
1	Additional Project Director (M&E, Research, and Institutional Strengthening)	CF	1	Overall in-charge of Landscape based M&E, GIS/ MIS; Monitor annual plans and project implementation, environment and social safeguards, develop and supervise TORs for studies and research; Facilitate to develop guidelines and manuals, capacity building plan, periodic progress tracking and performance indicators; Assist in identifying operational bottlenecks and facilitate smooth running of the system, preparing project reports, coordinate and supervise and guide DMUs, FMUs, and other stakeholders.	Full Time; On deputation from WBFD for a minimum of three years
2	Assistant Director (Capacity Development)	Manager	1	Assist in preparing master training plan (both nation and overseas), guide and supervise training needs assessment, prepare annual training calendar coordinating with all project wings and field units, develop training modules and material, plan and facilitate exposure trips, facilitate nomination of participants for training and exposure visits, coordinate for training through inter-sectoral convergence, guide and plan impact assessment from trainings, design templates, guidelines and manual, monitoring and reporting, coordinate with	Full Time; Open Market

	Position	Rank	Nr	Key Responsibilities	Remarks
				other stakeholders.	
3	MIS/ GIS Officer	Manager	1	Conduct needs assessment on the GIS-based systems, assess available data (availability in geographical extent, frequency, etc.), supervise GIS/RS operations, plan and outsource works to mapping agencies and ensure map preparation works, provide GIS trainings, prepare GIS operation manual, provide technical advice, assist in GIS based M&E, maintain inventory of GIS equipment, software, satellite imageries, coordinate with Wbfd GIS Cell for map production for planning and decision making, spatial analysis, monitoring and reporting; Facilitate to establish GIS operations at all levels; Coordinate for progress tracking and reporting; Facilitate to develop web enabled software application and roll out the MIS software throughout project; Troubleshoot any kind of systems related problems and maintain security of the systems, project website management and digital repository.	Full Time; Open Market
4	IEC/ Knowledge Material Officer	Manager	1	Develop knowledge material, publish newsletters, reports; Design publicity and awareness campaigns, prepare quarterly and annual reports, and assist in other project documentations; Assist in project publicity and information dissemination, implement communication strategy and plan; Organise events/ workshops; maintain digital library; Coordinate with other stakeholders	Full Time; Open Market
C. Livelihood and Capacity Development Wing					
1	Joint Project Director (Livelihoods and Partnerships)	DCF	1	Overall planning and implementation of livelihood and NTFP interventions; Annual plan, technical guidance, and supervision, coordinate for inter-sectoral convergence; Coordinate with financial institutions and CSR funds, facilitate rural financing and marketing of produce and products, coordinate for capacity building and trainings, support to leverage funds; Strategize gender mainstreaming and women/ vulnerable group empowerment, develop partnerships and networks; and Coordinate with DMUs, FMUs, and other stakeholders	Full Time; From FD on deputation for a minimum of three years
2	Business Development and Livelihoods Officer	Manager	1	Assist in annual planning and implementation of livelihood promotion; Guide on micro plan and microplanning process, support NTFP value chain and market analysis, facilitate rural financing, design small business/ enterprise for	Full Time; Open Market

	Position	Rank	Nr	Key Responsibilities	Remarks
				community institutions for income generation, guide establishing collection centres and cluster promotion; Guide on establishing processing units and value addition, coordinate for inter-sectoral convergence, coordinate for capacity building and trainings, design templates, guidelines and manual, monitoring and reporting, coordinate with other stakeholders.	
	Total Key Staff		16	Deputation/ Contract	Full Time
	Total Support Staff		13	Outsourcing	Full Time
	Total PMU Staff		29		

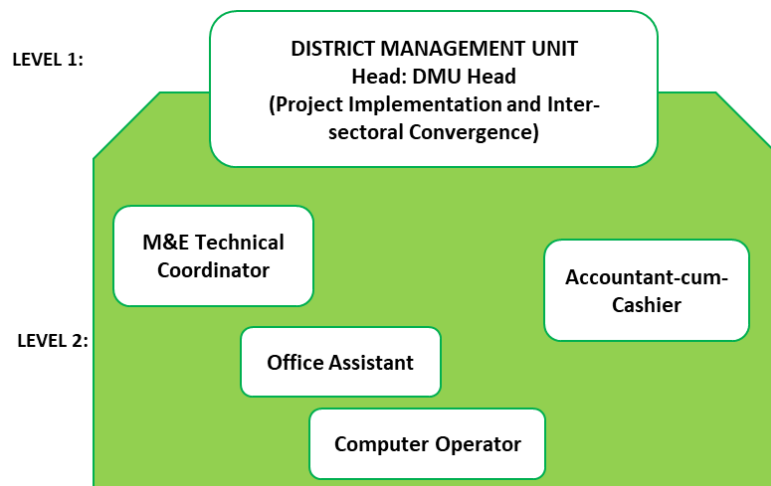
Source: JICA Survey Team

3.2 Structure of Divisional Management Unit (DMU)

DMU will be established at the divisional level and will function as the dedicated and extended unit of PMU for planning and implementation of the project activities, and as a part of the autonomous society, i.e., PMU. DMU will be headed by a Divisional Forest Officer (DFO) who is in the rank of DCF in the Forest Department. S/he would be an ex-officio in-charge of DMU and will be designated as DMU Head and would oversee the project in addition to the regular department functions and responsibilities. S/he will facilitate project implementation at the divisional level and will also extend all technical inputs and guidance to FMUs within their jurisdiction and at field level on a day-to-day basis. DMU will be responsible for supervising and guiding the works carried out by specialised agencies/ resource organisations or NGOs.

DMU Head will coordinate with the district administration for inter-sectoral convergence, organise and participate in DPC meetings at the district level, and extend support for preparing annual plans, estimates etc. DMU Head will also monitor, supervise, and follow-up with the subordinate offices, and provide guidance on documentation and reporting the physical and financial progress. DMU office will be guided by the project Operation Manual as well as PMU.

DMUs and subordinate FMUs will assist in maintaining the adopted project accounts, and timely prepare SOEs for onward submission. Female candidates will be encouraged to join the project at various positions. In addition, DMU will also be involved to channel funds to JFMCs through a system of 'Fund Advice Note' to be prepared and recommended by FMU and forwarded to DMU for releasing funds to JFMCs. The structure of DMU is given in the figure below.



Source: JICA Survey Team

Figure 3.2 Institutional Structure of the DMU

DMU will be supported by one MIS/ GIS professional designated as M&E Technical Coordinator, and one accountant-cum-cashier to be hired from the open market and deployed by PMU/ DMU at divisions. DMU will also be supported with one office assistant and one computer operator. The composition of DMU will be as follows:

Table 3.6 Proposed DMU Staffing

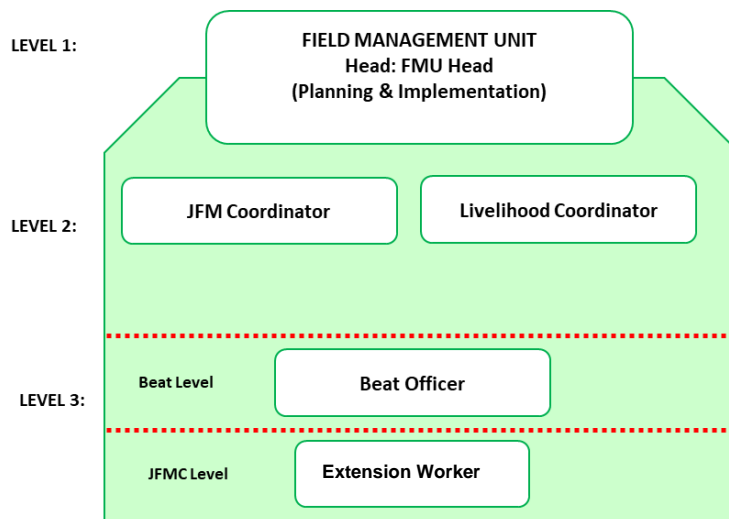
Sl. No.	Position	Rank	Mode	Source	Engagement	Qty	Remark	
Key Staff						5		
1	DMU Head	DCF		SFD	Part-Time	1	Key responsibility for project	NE
2	M&E Technical Coordinator		Contract	Open Market	Full Time	1	GIS/ MIS and regular M&E and documentation	E
3	Accountant-cum-Cashier		Contract	Open Market	Full Time	1	Prepare SOEs and accounting	E
4	Office Assistant		Contract	Open Market	Full Time	1	to assist DMU	E
5	Computer Operator		Contract	Open Market	Full Time	1	to assist project works	E
	SFD					1		
	Contract/ Open Market					4		
	Eligible (E)					4		
	Non-eligible (NE)					1		

Source: JICA Survey Team

3.3 Structure of Field Management Unit (FMU)

Following the Forest Department structure, FMU will be created as an extended arm of DMU and as a part of PMU. FMU will be headed by a Range Officer (RO) in the rank of ranger or above in the Forest Department. S/he would be ex-officio in-charge of FMU and will be designated as FMU Head and would oversee the project in addition to the regular department functions and responsibilities.

S/he will facilitate project implementation at the range level and will also extend all technical inputs and guidance to Beat Officers within their jurisdiction and at field level on day-to-day basis. FMU Head will be responsible for supervising and guiding the works carried out by the Beat Officers as well as JFMCs and facilitate convergence at the block level. The structure of FMU is given in the figure below.



Source: JICA Survey Team

Figure 3.3 Institutional Structure of the FMU

FMU will be supported by a set of personnel, viz., JFM Coordinator and Livelihood Coordinator. S/he would be further supported by Beat Officers and Extension Workers engaged at JFMC level. Female candidates will be encouraged to join the project at various positions. The composition of FMU will be as follows:

Table 3.7 Proposed FMU Staffing

Sl. No.	Position	Rank	Mode	Source	Engagement	Qty	Remark	
Key Staff							5	
1	FMU Head	DF (Deputy Forester)		SFD	Part-Time	1	Key responsibility for project	NE
2	JFM Coordinator		Contract	Open Market	Full Time	1	To assist in microplanning, capacity building, NRM interventions, convergence etc.	E
3	Livelihood Coordinator		Contract	Open Market	Full Time	1	To assist in microplanning, capacity building, livelihood interventions, IGAs etc.	E
4	Beat Officer			SFD	Part-Time	1	to assist FMU and facilitate field operations	NE
5	Extension Worker		Contract	Open Market	Full Time	1	to assist project works at JFMC / village level; engaged for 3 years to cover 5 JFMCs per Extension Worker	E
	SFD					2		
	Contract/ Open Market					3		
	Eligible (E)					3		
	Non-eligible (NE)					2		

Source: JICA Survey Team

3.4 Other Implementing/ Facilitating Institutions

(1) Project Management Consultants (PMC)

As a part of the project design and institutional arrangements, a team of experienced professionals will be procured and deployed at the state level as PMC to assist PMU in managing the project and to extend required technical guidance for a limited number of years. The team composition of PMC will carry a skill set and experience to complement and supplement PMU initiatives, provide technical support in preparing guidelines and procedures as well as provide an independent view on project implementation.

(2) Specialised Agencies/ Resource Organisations

For undertaking baseline surveys, impact assessments, training needs assessment (TNA), institutional training and capacity building, skill training for JFMCs and SHGs members, and cluster level enterprises, it will require to engage specialised and credible organisations having proven records of undertaking specified tasks. The specialised agency/ resource organisations will be procured by PMU through a local competitive bidding process, conforming to the applicable procurement guidelines. These organisations could be engaged at PMU or DMU level.

(3) Peoples Organisations – JFMCs

JFMCs identified in project areas will be engaged to execute JFM as well as livelihood interventions. The project will provide a one-time grant to JFMCs to support SHGs for income generation. In addition to NGOs/ resource organisations, JFMCs will facilitate to identify a local person who can qualify to act as extension worker for the project duration. S/he will be guided by the project teams to handhold and extend support to these community institutions for project implementation and reporting.

Procurement and Implementation Method					Attachment 12			
Work Item					Procurement Method	Ownership	Activity Executed by	Supported by
Component 1: Ecosystem based Climate Change Measures								
1.1			Hill & North Bengal Landscape					
	1.1	.1	Production of Quality Planting Material (QPM)					
		1.1.1.1	Upgrading Central Nurseries And Maintenance		DU	WBFD	DMU	PMU
		1.1.1.2	Production Of Quality Planting Material (QPM)		DU	WBFD	DMU	PMU
	1.1	.2	Improving Quality Of Forests					
		1.1.2.1	Creation Of New Seed Production Areas (SPAs) &		DU	WBFD	DMU	PMU

			Maintenanc e					
		1.1. 2.2	Preparation of Range Forest Project Implementa tion Plan (RFIP)		DU	WBFD	FMU	PMU/ DMU/ PMC
		1.1. 2.3	Plantation In Degraded Forest Areas					
			a) Sal Plantation					
				Survey, demarcation, advance soil works, & plantation	MOU	WBFD	DMU/ FMU/ JFMC	PMU
				Maintenance (1st yr, 2nd yr, 3rd year)	MOU	WBFD	DMU/ FMU/ JFMC	PMU
			b) Misc. Plantation					
				Survey, demarcation, advance soil works, & plantation	MOU	WBFD	DMU/ FMU/ JFMC	PMU
				Maintenance (1st yr, 2nd yr, 3rd year)	MOU	WBFD	DMU/ FMU/ JFMC	PMU
		1.1. 2.4	Tree Plantation Outside of Forest Areas (TPOFA)					

				i) Preparatory Works (identification of site, beneficiary group, survey and demarcation)	MOU	PWD, Panchayat etc.	Beneficiary Group/DMU/FMU	PMU
				ii) Advance Soil Work and Planting	MOU	PWD, Panchayat etc.	Beneficiary Group/DMU/FMU	PMU
				iii) Mulching	MOU	PWD, Panchayat etc.	Beneficiary Group/DMU/FMU	PMU
				iv) Cleaning	MOU	PWD, Panchayat etc.	Beneficiary Group/DMU/FMU	PMU
				v) Watch and ward	MOU	PWD, Panchayat etc.	Beneficiary Group/DMU/FMU	PMU
				vi) Fencing	MOU	PWD, Panchayat etc.	Beneficiary Group/DMU/FMU	PMU
				vii) Maintenance (1st, 2nd and 3rd year)	MOU	PWD, Panchayat etc.	Beneficiary Group/DMU/FMU	PMU
	1.1 .3		Ecosystem-based Disaster Risk Reduction (Eco DRR) Activities					

		1.1. 3.1	Embankment Protection In North Bengal (Inside PAs - Jaldabada, etc.)					
			a) Large Check Dam	i) Preparatory works including site selection	LCB	WBFD	Contractor	DMU/PMU
				ii) Construction works of check dam	LCB	WBFD	Contractor	DMU/PMU
				iii) Maintenance	DU	WBFD	DMU/FMU	PMU
			b) Medium Check Dam	i) Preparatory works including site selection	LCB	WBFD	Contractor	DMU/PMU
				ii) Construction works of check dam	LCB	WBFD	Contractor	DMU/PMU
				iii) Maintenance	DU	WBFD	DMU/FMU	PMU
			c) Small Check Dam	i) Preparatory works including site selection	LCB	WBFD	Contractor	DMU/PMU
				ii) Construction works of check dam	LCB	WBFD	Contractor	DMU/PMU
				iii) Maintenance	DU	WBFD	DMU/FMU	PMU
			d) Grass Planting Along The Outlets		LCB/ DU	WBFD	Contractor/ DMU/ FMU	DMU/ PMU
			e) Boulder Sausage Work Along The Embankment	i) Large Check dam	LCB	WBFD	Contractor	DMU/ PMU

	1.1.4		Green Laboratory Initiatives					
		1.1.4.1	Nature Study in Forest Areas by Students		DU	WBFD	PMU/DMU	PMC
		1.1.4.2	Nature And Forests Programme Engaging Education/ Research Institutions		MOU	WBFD	Research Institutions/ Technical Agency	PMU/PMC
1.2			Dry Lateritic & Alluvial Landscape					
	1.2.1		Production of Quality Planting Material					
		1.2.1.1	Upgrading Central Nurseries And Maintenance		LCB	WBFD	Contractor	DMU/PMU
		1.2.1.2	Production Of Quality Planting Material (QPM)		DU	WBFD	DMU	PMU

	1.2 .2		Improving Quality Of Forests					
		1.2. 2.1	Preparation of Range Forest Project Implementation Plan (RFIP)		DU	WBFD	FMU	PMU/ DMU/ PMC
		1.2. 2.2	Assisted Natural Regeneration (ANR) of Degraded Sal Forests (RDF) (Coppicing)	Preparatory works (site identification, survey & demarcation, etc.)	MOU	WBFD	DMU/ FMU/ JFMCs	PMU
				1st year coppicing	MOU	WBFD	DMU/ FMU/ JFMCs	PMU
				4th year multi shoot cutting	MOU	WBFD	DMU/ FMU/ JFMCs	PMU
		1.2. 2.3	Plantation In Degraded Forest Areas					
			a) Sal Plantation	Survey, demarcation, advance soil works, & plantation	MOU	WBFD	DMU/ FMU/ JFMC	PMU
				Maintenance (1st yr, 2nd yr, 3rd year)	MOU	WBFD	DMU/ FMU/ JFMC	PMU

			b) Misc. Plantation	Survey, demarcation, advance soil works, & plantation	MOU	WBFD	DMU/ FMU/ JFMC	PMU
				Maintenance (1st yr, 2nd yr, 3rd year)	MOU	WBFD	DMU/ FMU/ JFMC	PMU
		1.2. 2.4	Tree Plantation Outside of Forest Areas (TPOFA)					
				i) Preparatory Works (identification of site, beneficiary group, survey and demarcation)	MOU	PWD, Panchayat etc.	Beneficiary Group/ DMU/ FMU	PMU
				ii) Advance Soil Work and Planting	MOU	PWD, Panchayat etc.	Beneficiary Group/ DMU/ FMU	PMU
				iii) Mulching	MOU	PWD, Panchayat etc.	Beneficiary Group/ DMU/ FMU	PMU
				iv) Cleaning	MOU	PWD, Panchayat etc.	Beneficiary Group/ DMU/ FMU	PMU
				v) Watch and ward	MOU	PWD, Panchayat etc.	Beneficiary Group/ DMU/ FMU	PMU
				vi) Fencing	MOU	PWD, Panchayat etc.	Beneficiary Group/ DMU/ FMU	PMU

				vii) Maintenance (1st, 2nd and 3rd year)	MOU	PWD, Panchayat etc.	Beneficiary Group/ DMU/ FMU	PMU
	1.2.3		Ecosystem-based Disaster Risk Reduction (Eco DRR) Activities					
		1.2.3.1	Preparation of GIS based CAT Plans					
			i) Preparation of CAT Plans and site identification	Site identification	DU	WBFD	DMU/ FMU	PMU/ PMC
				Procurement of vendor for GIS analysis	LCB	WBFD	Contractor	PMU/ PMC
			ii) Preparation of Site Specific Plans		LCB	WBFD	Contractor	DMU/ PMU/ PMC
		1.2.3.2	Soil & Moisture Conservation Works based on CAT Plans					
			i) Preparatory works	Procurement of materials	LCB	DMU	DMU/ FMU	PMU

			(including procurement of materials and contractors as per the site specific plan)					
				Procurement of contractors & Construction	LCB	DMU	Contractor	PMU
				Construction by JFMCs	MOU	DMU	JFMC/FMU	PMU
	1.2.4		Green Laboratory Initiatives					
		1.2.4.1	Nature Study in Forest Areas by Students		DU	WBFD	PMU/DMU	PMC
1.3			Deltaic Landscape					
	1.3.1		Community Resilience Measures In Sundarbans					
		1.3.1.1	Preparatory Works Including Site Selection		DU	WBFD	DMU/FMU	PMU/PMC
		1.3.1.2	Preparation Of Designs Mangrove		DU	WBFD	DMU/FMU	PMU/PMC

			Restoration With Traditional Defense Measures					
		1.3.1.3	Implementation Of Pilot Activities		DU	WBFD	DMU/FMU	PMU/PMC
		1.3.1.4	Evaluation Of Pilot Activities		DU	WBFD	DMU/FMU	PMU/PMC
		1.3.1.5	Preparation of Plan to Install of Enhanced Models		DU	WBFD	DMU/FMU	PMU/PMC
		1.3.1.6	Installation Of Enhanced Mangrove Restoration Models		MOU	WBFD	DMU/FMU/JFMC	PMU/PMC
	1.3.2		Green Laboratory Initiatives					
		1.3.2.1	Nature Study in Forest Areas by Students		DU	WBFD	PMU/DMU	PMC
		1.3.2.2	Nature And Forests Programme Engaging Education/		MOU	WBFD	Research Institutions/ Technical Agency	PMU/PMC

			Research Institutions					
Component 2: Biodiversity Conservation and Restoration								
2.1			Hill & North Bengal Landscape					
	2.1	.1	Human Wildlife Conflict Mitigation					
		2.1.1.1	Stress-induced Conflict Risk Reduction by Wild Animals					
				i) Identification of strategic locations, target FMUs, JFMCs and make plans	DU	WBFD	DMU/FMU	PMU/PMC
				ii) Implementation of solar fencing of 40 km	LCB	WBFD	Contractor	PMU/PMC
				iii) Implementation of maintenance works	LCB	WBFD	Contractor	PMU/PMC
		2.1.1.2	Support Communities for Human Wildlife Mitigation					
				i) Identification of strategic locations, target FMUs, JFMCs and make plans	DU	-	DMU/FMU	PMU/PMC

				ii) Creation of village level rapid response team	DU	-	DMU/ FMU	PMU/ PMC
				iii) Training of village level rapid response team	DU	-	DMU/ FMU	PMU/ PMC
				iv) Procurement & distribution of necessary equipment and materials	LCB	JFMC	DMU	PMU/ PMC
		2.1. 1.3	Pilot Eco Sensitive Zone (ESZ) Plantation with Non-palatable/Repulsive Species					
				i) Identification of strategic locations, target FMUs, JFMCs and make plans	DU	Beneficiary	DMU/ FMU	PMU/ PMC
				ii) Creation and pilot planting	DU	Beneficiary	DMU/ FMU	PMU/ PMC
				iii) Implementation of maintenance works	DU	Beneficiary	FMU	DMU
	2.1 .2		Species Conservation Programme					
		2.1. 2.1	Species Recovery Programme for Local RET(North)					
				i) Selection of RET Species	DU	WBFD	DMU/ FMU	PMU/ PMC

				ii) Establishment of Protection Plot	DU	WBFD	DMU/ FMU	PMU/ PMC
				iii) Implementaiton of Species Recovery Programme	DU	WBFD	DMU/ FMU	PMU/ PMC
	2.1 .3		Studies On Wild Animals And Their Behavior					
		2.1. 3.1	Study On 5 Species Of Lesser Cat In North Bengal		Outsour ce	WBFD	Specializ ed Agency/ Institutio n	PMU/ PMC
2.2.			Dry Lateritic & Alluvial Landscape					
	2.2 .1		Biodiversit y Conservatio n Through Peoples' Participatio n In Protected Areas					
		2.2. 1.1	Bethuadaha ri Wildlife Sanctuary					

				i) Community mobilisation and planning	DU	WBFD	DMU/ FMU/ JFMC	PMU/ PMC
				ii) Sanctuary protection and management	DU	WBFD	DMU/ FMU/ JFMC	PMU/ PMC
				iii) For improved visitor experience and awareness	DU	WBFD	DMU/ FMU/ JFMC	PMU/ PMC
				iv) For improved stake of local communities in WLS conservation	DU	WBFD	DMU/ FMU/ JFMC	PMU/ PMC
		2.2. 1.2	Ballavpur Wildlife Sanctuary					
				i) Community mobilisation and planning	DU	WBFD	DMU/ FMU/ JFMC	PMU/ PMC
				ii) Sanctuary protection and management	DU	WBFD	DMU/ FMU/ JFMC	PMU/ PMC
				iii) For improved visitor experience and awareness	DU	WBFD	DMU/ FMU/ JFMC	PMU/ PMC
				iv) For improved stake of local communities in WLS conservation	DU	WBFD	DMU/ FMU/ JFMC	PMU/ PMC
		2.2 .2	Conservation of Smaller Mammals					
		2.2. 2.1	Habitat Improvement					
				i) Identification of specific forest as the habitat of target animals, preparation of plan for target forests	DU	WBFD	DMU/ FMU	PMU/ PMC

				ii) Development of water holes	DU/ MOU	WBFD	DMU/ FMU/ JFMC	PMU/ PMC
		2.2. 2.2	Conservation Awareness Generation					
				i) Developing outreach and awareness material	LCB	WBFD	DMU	PMU/ PMC
				ii) Community level meetings	DU	-	DMU/ FMU	PMU/ PMC
	2.2 .3		Human Wildlife Conflict Mitigation					
		2.2. 3.1	Rescue Centre for Elephants including Study of their Behaviour					
				i) Getting required permissions from concerned agencies, procurement of contractor	MOU	WBFD	WBZA	WBFD/ PMU
				ii) Construction of the enclosure	LCB	WBFD	WBZA/ Contractor	WBFD/ PMU
		2.2. 3.2	Stress- induced Conflict Risk Reduction by Wild Animals					
				i) Procurement of equipment and materials	LCB	WBFD	DMU/ FMU	PMU/ PMC

				ii) Implementation of augmentation of mitigation activities	DU	WBFD	DMU/ FMU/ JFMC	PMU/ PMC
		2.2. 3.3	Tracking of Elephant Route through Radio Collaring					
				i) Procurement of equipment and materials	LCB	WBFD	PMU	PMC
				ii) Installation of collars	DU	WBFD	DMU	PMC
		2.2. 3.4	Enhanceme nt of Tranquilise r Equipment for Wild Animals to be kept in Airavat Van	i) Procurement of equipment and materials	LCB	WBFD	PMU	PMC
		2.2. 3.5	Installation of Early Warning System (EWS) for Wild Elephants					
				i) Procurement of EWS equipment and materials	LCB	WBFD	PMU	PMC
				ii) Installation of EWSs	DU	PMU	DMU/ FMU	PMC
		2.2. 3.6	Developme nt of Software					

			Application for Compensation for Depredation by Wild Animals					
				i) Development of software application	LCB	WBFD	PMU	PMC
				ii) Installation of software application	DU	PMU	DMU/ FMU	PMC
		2.2. 3.7	Installation of Elephant Proof Trench (EPT) in South-West Bengal					
				i) Planning, target area and communities	DU	PMU	DMU/ FMU	PMC
				ii) Construction of EPT	DU/ MOU	PMU	DMU/ FMU/ JFMC	PMC
	2.2 .4		Species Conservation Programme					
		2.2. 4.1	Dolphin Conservation Programme					
				i) Planning, target area/ population selection etc.	DU	WBFD	DMU/ FMU/ Stakeholders	PMU/ PMC

				ii) Implementation of Conservation Action Plan	DU	WBFD	DMU/ FMU/ Stakeholders	PMU/ PMC
		2.2. 4.2	Breeding and Releasing of Indian Pangolin in Dry Lateritic and Alluvial Landscape					
				i) Planning, target area/ population selection etc.	MOU	WBFD	WBZA	PMU/ PMC
				ii) Implementation of Conservation Action Plan	MOU	WBFD	WBZA	PMU/ PMC
		2.2. 4.3	Breeding and Releasing of Fishing Cat					
				i) Planning, target area/ population selection etc.	MOU	WBFD	WBZA	PMU/ PMC
				ii) Implementation of Conservation Action Plan	MOU	WBFD	WBZA	PMU/ PMC
		2.2. 4.4	Breeding and Releasing of Indian Vulture					
				i) Planning, target area/ population selection etc.	MOU	WBFD	WBZA	PMU/ PMC
				ii) Implementation of Conservation Action Plan	MOU	WBFD	WBZA	PMU/ PMC

		2.2. 4.5	Species Recovery Programme For Local RET					
				i) Identify important RET plant species to make a long list, conduct rapid survey for these species	DU	WBFD	DMU/ FMU	PMU/ PMC
				ii) Identifying factors that underlie a decline and determining which of these factors can be significantly influenced through management	DU	WBFD	DMU/ FMU	PMU/ PMC
				iii) Selection of RET species for species recovery programme	DU	WBFD	DMU/ FMU	PMU/ PMC
				iv) Preparing and implementing the Species Recovery Plans and establishing protection plots	DU	WBFD	DMU/ FMU	PMU/ PMC
2.3			Deltaic Landscape					
	2.3 .1		Biodiversity Conservation Through Peoples' Participation In Protected Area					
		2.3. 1.1	Chintamoni Kar Bird Sanctuary (CKBS)					
				i) Revision of Management Plan (if required), mobilization of local community	DU	WBFD	DMU/ FMU	PMU/ PMC
				ii) Implementation of infrastructure development	LCB	WBFD	DMU/ FMU	PMU/ PMC

				iii) Development of forum and awareness activities	DU	WBFD	DMU/ FMU	PMU/ PMC
		2.3. 1.2	Bibhutibhu shan Wildlife Sanctuary					
				i) Revision of Management Plan (if required), mobilization of local community	DU	WBFD	DMU/ FMU	PMU/ PMC
				ii) Implementation of infrastructure development	LCB	WBFD	DMU/ FMU	PMU/ PMC
				iii) Development of forum and awareness activities	DU	WBFD	DMU/ FMU	PMU/ PMC
				iv) Development of Orchidarium	DU	WBFD	DMU/ FMU	PMU/ PMC
	2.3 .2		Human Wildlife Conflict Mitigation					
		2.3. 2.1	Stress Induce Conflict Risk Reduction By Wild Animals					
				i) Procurement of steel-reinforced nylon nets and distribution	LCB	WBFD	Contracto r/ DMU	PMU/ PMC
				ii) Net replacement	DU	WBFD	FMU/ JFMC	DMU
		2.3. 2.2	Veterinary Facility In Sundarbans					
				i) Procurement of equipment for multi-specialty veterinary hospital and staff placement	LCB	WBFD	DMU/ WBZA	PMU/ PMC
				ii) Construction of infrastructure (hospital waste disposal unit and etc.)	LCB	WBFD	DMU/ WBZA/	DMU

							Contractor	
				iii) Enhancement of height of embankment	LCB	WBFD	DMU/ WBZA/ Contractor	DMU
				iv) Operationalization of hospital	DU	WBFD	DMU	WBFD
	2.3	.3.	Studies On Wild Animals And Their Behavior					
		2.3.3.1	Assessment Of Aquatic Biodiversity In Sundarbans And Territorial Waters		LCB/ DU	WBFD	Specilized Agency/ Institution	PMU/ PMC
		2.3.3.2	Studies Suggested By Central Asian Flyway		LCB/ DU	WBFD	Specilized Agency/ Institution	PMU/ PMC
Component 3: Livelihood Improvement								
3.0			Preparatory Works (All					

			Landscapes)					
				i) Preparation of Manuals and Guidelines	DU	WBFD	PMU/ PMC	-
				ii) Deployment of Technical Agency for IGA Support Fund Management	DU	WBFD	PMU	PMC
				iii) Finalization of Selection Criteria of JFMCs & Selection of JFMCs	DU	WBFD	PMU	PMC
3.1			Hill & North Bengal Landscape					
	3.1 .1		Preparatory Activities With JFMCs					
		3.1. 1.1	Community Mobilization		DU	-	DMU/ FMU	PMU/ PMC
		3.1. 1.2	Reorganization/ Reconstitution Of JFMCs And Confirmation Of Demarcation Of JFMC Boundaries		DU	-	DMU/ FMU/ JFMC	PMU/ PMC
		3.1. 1.3	Familiarization Of Project To JFMC		DU	-	DMU/ FMU	PMU/ PMC

		3.1.1.4	Micro Planning			WBFD		
				i) Micro plan preparation	DU	-	DMU/ FMU/ JFMC	PMU/ PMC
				b) Revisiting of Micro Plan (After 3 years)	DU	-	DMU/ FMU/ JFMC	PMU/ PMC
		3.1.1.5	EPA/ CDA		DU	JFMC	DMU/ FMU/ JFMC	DMU/ PMU/ PMC
	3.1.2		Support For Income Generation		DU	SHG	DMU/ FMU/ JFMC/ SHG	PMU/ PMC/ Business Development Support Agency
	3.1.3		Support for Community Well Being (Local Traditional Healers)		DU	-	DMU/ FMU/ JFMC	PMU/ PMC
	3.1.4		Support for Community Mobilising (Extension Workers)		DU	-	DMU	PMU/ PMC/ Other stakeholders
3.2			Dry Lateritic & Alluvial Landscape					
	3.2.1		Preparatory Activities					

			With JFMCs					
		3.2.1.1.	Community Mobilization		DU	-	DMU/FMU	PMU/PMC
		3.2.1.2	Reorganization/ Reconstitution Of JFMCs And Confirmation Of Demarcation Of JFMC Boundaries		DU	-	DMU/FMU/JFMC	PMU/PMC
		3.2.1.3	Familiarization Of Project To JFMC		DU	-	DMU/FMU	PMU/PMC
		3.2.1.4	Micro Planning			WBFD		
				i) Micro plan preparation	DU	-	DMU/FMU/JFMC	PMU/PMC
				b) Revisiting of Micro Plan (After 3 years)	DU	-	DMU/FMU/JFMC	PMU/PMC
		3.2.1.5	EPA/ CDA		DU	JFMC	DMU/FMU/JFMC	DMU/PMU/PMC
	3.2.2		Support For Income Generation		DU	SHG	DMU/FMU/JFMC/SHG	PMU/PMC/ Business Development

								Support Agency
	3.2.3		Support for Community Well Being (Local Traditional Healers)		DU	-	DMU/ FMU/ JFMC	PMU/ PMC
	3.2.4		Support for Community Mobilising (Extension Workers)		DU	-	DMU	PMU/ PMC/ Other stakeholders
3.3			Deltaic Landscape					
	3.3.1		Preparatory Activities With JFMCs					
		3.3.1.1	Community Mobilization		DU	-	DMU/ FMU	PMU/ PMC
		3.3.1.2	Reorganization/ Reconstitution Of JFMCs And Confirmation Of Demarcation Of JFMC Boundaries		DU	-	DMU/ FMU/ JFMC	PMU/ PMC
		3.3.1.3	Familiarization Of		DU	-	DMU/ FMU	PMU/ PMC

			Project To JFMCs					
		3.3.1.4	Micro Planning			WBFD		
				i) Micro plan preparation	DU	-	DMU/ FMU/ JFMC	PMU/ PMC
				b) Revisiting of Micro Plan (After 3 years)	DU	-	DMU/ FMU/ JFMC	PMU/ PMC
		3.3.1.5	EPA/ CDA		DU	JFMC	DMU/ FMU/ JFMC	DMU/ PMU/ PMC
	3.3.2		Support For Income Generation		DU	SHG	DMU/ FMU/ JFMC/ SHG	PMU/ PMC/ Busines s Develo pment Support Agency
	3.3.4		Support for Community Mobilising (Extension Workers)		DU	-	DMU	PMU/ PMC/ Other stakeho lders
Component 4: Institutional Strengthening								
4.1			Strengthening Project Management					
	4.1.1		Capacity Developme	Procurement will be undertaken as per 4.3.1.4.				

			nt on MIS/ DX				
		4.1.1.1.	Digitisation of JFM boundary within the project target area, except the areas whose boundary GIS data was already developed		DU/ LCB	WBFD	WBFD GIS Unit/ Contractor PMU/ PMC
		4.1.1.2.	Development of web-GIS platform of WBFD	i) Procurement of mouza sheet	DU/ LCB	WBFD	WBFD GIS Unit/ Contractor PMU/ PMC
		4.1.1.3.	Upgrade of mobile application (e-monitoring) to add function of e-plantation journal including training	ii) Procurement of GPS (Procurement under 4.3.1.4)	LCB	WBFD	WBFD GIS Unit/ Contractor PMU/ PMC
		4.1.1.4.	Development of project MIS platform linked to web-GIS	iii) Outsourced Digitisation (JFMC selection) (Procurement under 4.3.1.4)	LCB	WBFD	WBFD GIS Unit/ Contractor PMU/ PMC

		4.1.1.5	Training of field officers (range/ beat officers) in the target area on the operation of GPS and mobile application	Procurement plan same as 4.2.1	DU	-	Specialized Institution/ PMU	PMC
		4.1.1.6	Training of DMUs/ FMUs on the operation of MIS and mobile application	Procurement plan same as 4.2.3	DU	-	Specialized Institution/ PMU	PMC
		4.1.1.7	Site verification and Boundary Setting					
				i) On-site verification of JFMC boundary digitisation	DU	-	DMU/ JFMC	PMC/ PMU
				ii) Inspection of plantation work	DU	-	DMU/ JFMC	PMC/ PMU
				iii) Boundary pillar setting	DU	WBFD	DMU/ JFMC	PMC/ PMU
		4.1.1.8	Pilot Project for Use of UAV for development of technical guidelines					

				i) Preparation of pilot project design	DU	WBFD	PMU	PMC
				ii) Procurement of UAV (Procurement under 4.3.1.4)	LCB	WBFD	Contractor/ PMU	PMC
				iii) Undertaking pilot activities including training of DMU, FMU on UAV operation	DU	WBFD	DMU/ FMU	PMC
				iv) UAV image process analysis including training of DMUs	DU	WBFD	PMU/ DMU/ FMU	PMC
				v) Preparation of technical guideline	DU	WBFD	PMU	PMC
	4.1.2		Mobility		LCB	WBFD	PMU	PMC
	4.1.3		Buildings		LCB	WBFD	Contractor/ PMU	PMC
	4.1.4		Project Contractual Staff					
				i) PMU	DU/ LCB	-	PMU	PMC
				ii) DMU	DU/ LCB	-	PMU	PMC
				iii) FMU	DU/ LCB	-	PMU	PMC
	4.1.5		Digital Strengthening		LCB	WBFD	PMU	PMC
4.2			Capacity Development					
	4.2.1		Training Plan based on Training Needs Assessment (TNA)					

				i) Training Needs Assessment	DU	-	PMU/ PMC	-
				ii) Preparation of Training Plan & Annual Training Calendar	DU	PMU	PMU/ PMC	-
	4.2 .2		Trainings of Forest Officers (DCF and above ranks)					
				i) Specialized trainings	DU	-	PMU	PMC
				ii) Exposure Trips	DU	-	PMU	PMC
				iii) International training	DU	-	PMU	PMC
	4.2 .3		Training of Forest Officers/ Frontline Staff (Ranger and below ranks)					
				i) Specialized trainings	DU	-	PMU	PMC
				ii) Exposure Trips	DU	-	PMU	PMC
				iii) International training (regional)	DU	-	PMU	PMC

	4.2.4		National Workshop		DU	-	PMU	PMC
	4.2.5		Trainings For JFMC/ SHG Members					
				i) JFMC members	DU	-	DMU/ FMU	PMU/ PMC
				ii) SHG members	DU	-	DMU/ FMU	PMU/ PMC
4.3			Monitoring & Evaluation					
	4.3.1		Progress Monitoring					
		4.3.1.1	Biodiversity Monitoring		LCB	WBFD	Contractor/ PMU	PMC
		4.3.1.2	Concurrent Monitoring & Periodic Review		DU	WBFD	PMU	PMC
		4.3.1.3	Community Self Monitoring		DU	WBFD	FMU/ JFMC	DMU/ PMU/ PMC
		4.3.1.4	Computerized MIS & GIS/					

			Application s/ UAV For Monitoring					
				i) Web based GIS linked to MIS system	LCB	WBFD	Contractor/ PMU	PMC
				ii) Procurement of GPS	LCB	WBFD	PMU	PMC
				iii) Mobile app- Upgrading e-monitoring for e-plantation journal apps	LCB	WBFD	Contractor/ PMU	PMC
				iv) Development of project MIS platform linked to web-GIS & mobile apps	LCB	WBFD	Contractor/ PMU	PMC
		4.3.1.5	Computerized Accounting System		LCB	WBFD	Contractor/ PMU	PMC
		4.3.1.6	Annual Strategy Planning & Review Workshops		DU	-	PMU/ Circles	PMC
	4.3.2		Impact Evaluation					
		4.3.2.1	Annual Outcome Assessment		DU	WBFD	DMU	PMU/ PMC
		4.3.2.2	Baseline And Impact Surveys					
			D) Socio Economic/ Gender Surveys	i) Socio Economic/ Gender Surveys (baseline, mid & end term)	DU/ LCB	WBFD	Contractor/ PMU	PMC
				ii) Physical (forest resource) Surveys (baseline, mid & end term)	DU/ LCB	WBFD	Contractor/ PMU	PMC

		4.3.2.3	Thematic And Short Studies		DU/ LCB	WBFD	Contractor/ PMU	PMC
		4.3.2.4	Environmental Impact Assessment	Baseline, mid and end term	LCB	WBFD	Contractor/ PMU	PMC
	4.3.3		Audits					
			a) Statutory Financial Audits		LCB	WBFD	CA Firm	PMU
			b) Concurrent Audits (Internal Audit)		LCB	-	PMU	DMU
			c) Social Audits		DU	JFMC	DMU/ FMU/ JFMC	PMU/ PMC
4.4			Strengthening Forest Research					
			a) Creation of carbon estimation lab		DU	WBFD	DMU	PMU/ PMC
			b) Research studies based on the research plan		DU	WBFD	DMU	PMU/ PMC
4.5			Publicity And Publication					

	4.5 .1		Project Website		LCB	WBFD	Contractor/ PMU	PMC
	4.5 .2		Guidelines, Manuals And Annual Reports	development by PMU printing by LCB	DU/ LCB	WBFD	Contractor/ PMU	PMC
	4.5 .3		Short Films/ Digital Documentation		LCB	WBFD	Contractor/ PMU	PMC
	4.5 .4		Knowledge Material/ Course Material	development by PMU printing by LCB	DU/ LCB	WBFD	Contractor/ PMU	PMC
	4.5 .5		“Proof of Concept” (PoC) activities for several digital technology/ innovation		DU/ICB /LCB	WBFD	GIS Cell/PMU/PMC	-
Component 5: Project Management Consultant (PMC)					ICB		PMU/ WBFD	
					LCB: Local Competitive Bidding/ ICB: International Competitive Bidding/ DU: Direct Undertaking			
					DU: PMU directly select governmental institutions as executor with MoU.			
					For ICB and LCB, PMU request WBFD for publishing notice of tender, then PMU uploads NIT (notice inviting tender) on West Bengal government e-portal for governmental procurement.			
					If the valued off procurement is less than 1 Lakh INR, then PMU invites quotation (NIQ:Notice Inviting Quotation) for tender by GeM (Government electronic Market place).			

Attachment 21: EIRR Calculation

Table Economic Internal Rate of Return (EIRR) of the Project

(Thousand INR)

Year	Economic Cost			Ecosystem based climate change measures								Biodiversity Conservation		Livelihood Improvement						CO ₂ Sequestration	Total Benefit	B-C	
	Investment	O & M	Total	Hill&North Bengal			Dry Lateritic Alluvial				Deltaic	Human Wildlife Conflict Mitigation		Hill&North Bengal		Dry Lateritic Alluvial		Deltaic	EP A/C ID				
	Cost *1	Cost *2		Sal Plantation	Misc Plantation (Teak&Bamboo)	Strip Plantation	Sal Coping	Sal Plantation	Misc Plantation	Strip Plantation	Man grove Plantation	Hill &North Bengal	Dry Lateritic Alluvial	Home Stay	Apiculture	Sal Plate	Duck Farming	Api Culture	Community Infrastructure Development	(Thousand INR)	(Thousand INR)		
1	3,49,734		3,49,734	-	-	-	-	-	-	-	-	15,800	2,98,512	-	-	-	-	-	-	-	3,14,312	6,64,046	
2	5,87,308		5,87,308	-	-	-	-	-	-	-	-	15,800	2,98,512	-	-	-	-	-	-	-	3,14,312	9,01,620	
3	5,86,480		5,86,480	3,347	4,463	7,494	7,350	16,737	46,835	7,494	1,500	24,804	81,873	-	-	-	-	-	58,948	1,453	2,09,783	7,96,264	
4	5,90,520		5,90,520	6,420	6,700	11,693	10,000	26,521	89,474	11,693	1,950	32,704	67,383	389	1,974	1,616	-539	-355	-	1,10,785	3,415	1,72,599	7,63,119

5	5,5 2,3 64		5,5 2,3 64	- 4,14 7	- 5,99 1	- 10, 914	- 2,650	- 13,75 2	- 65,8 99	- 10,9 14	- 2,40 0	32,7 04	67,3 83	916	- 3,65 8	3,34 3	- 1,23 9	-676	- 96,5 64	4,10 3	- 1,10, 357	- 6,62, 721
6	5,5 3,8 22		5,5 3,8 22	- 1,84 6	- 2,41 0	- 4,9 94	- -	- 6,972	- 39,1 46	- 4,99 4	-900	32,7 04	67,3 83	1,33 1	- 5,26 0	6,46 7	- 2,55 7	-963	35,5 52	4,10 3	77,5 01	- 4,76, 321
7	4,4 8,2 66		4,4 8,2 66	- 1,05 8	- 1,31 5	- 2,7 01	- -	- 3,720	- 20,1 83	- 2,70 1	-450	32,7 04	67,3 83	1,29 7	- 2,72 2	6,89 4	- 3,62 1	-504	35,5 52	4,10 3	1,08, 957	- 3,39, 309
8	1,9 8,9 81		1,9 8,9 81	-287	-501	- 1,0 03	- -	-716	- 4,29 8	- 1,00 3	-	32,7 04	67,3 83	2,56 5	- 1,35 0	8,50 3	- 3,80 4	-256	34,9 63	4,10 3	1,37, 003	- 61,9 78
9		38, 67 5	38, 67 5	558	-	526	88	6,491	3,09 5	526	-	32,7 04	67,3 83	4,75 8	5,73 4	10,3 21	- 3,45 2	1,04 8	33,7 84	4,10 3	1,67, 666	1,28, 991
10		38, 67 5	38, 67 5	1,11 9	-	3,3 03	175	12,99 1	24,1 98	3,30 3	-	32,7 04	67,3 83	8,02 7	10,2 64	14,8 37	-823	1,88 1	32,6 05	4,10 3	2,16, 068	1,77, 394
11		38, 67 5	38, 67 5	2,22 7	-	8,1 81	175	25,93 0	55,1 49	8,18 1	-	27,9 64	- 22,1 70	11,0 82	14,7 16	21,1 95	608	2,69 7	32,6 05	4,10 3	1,92, 642	1,53, 967
12		38, 67 5	38, 67 5	4,43 6	3,92 4	16, 362	175	51,79 0	1,10, 298	16,3 62	-	27,9 64	- 22,1 70	13,0 35	18,2 46	25,6 11	3,64 1	3,35 0	32,6 05	4,10 3	3,09, 730	2,71, 056
13		38, 67 5	38, 67 5	5,54 1	4,90 5	29, 569	175	64,72 0	2,02, 026	29,5 69	-	30,3 34	22,6 06	13,2 60	20,2 25	28,8 51	4,28 6	3,71 4	32,6 05	4,10 3	4,96, 489	4,57, 814
14		38, 67 5	38, 67 5	5,54 1	3,43 4	40, 374	175	64,72 0	2,65, 054	40,3 74	-	32,7 04	67,3 83	13,1 85	20,8 34	30,3 63	5,26 6	3,82 4	32,6 05	4,10 3	6,29, 937	5,91, 262
15		38, 67 5	38, 67 5	5,54 1	-	43, 525	175	64,72 0	2,78, 560	43,5 25	-	32,7 04	67,3 83	13,1 85	22,2 10	32,3 07	5,18 6	4,07 9	32,6 05	4,10 3	6,49, 807	6,11, 133
16		38, 67 5	38, 67 5	5,54 1	-	43, 525	175	64,72 0	2,78, 560	43,5 25	-	32,7 04	67,3 83	13,1 10	23,8 15	35,9 79	5,26 6	4,37 2	32,6 05	4,10 3	6,55, 382	6,16, 707

17		38,675	38,675	5,541	-	43,525	175	64,720	2,78,560	43,525	-	32,704	67,383	13,185	24,801	37,923	5,256	4,555	32,605	4,103	6,58,560	6,19,885
18		38,675	38,675	5,541	-	43,525	2,32,800	64,720	2,78,560	43,525	-	32,704	67,383	12,308	26,188	40,083	4,096	4,810	32,605	4,103	8,92,949	8,54,274
19		38,675	38,675	5,541	-	43,525	2,30,063	64,720	2,78,560	43,525	-	32,704	67,383	10,153	21,502	35,953	2,469	3,966	32,605	4,103	8,76,770	8,38,095
20		38,675	38,675	5,541	-	43,525	-2,650	64,720	2,78,560	43,525	128	32,704	67,383	6,695	14,919	30,293	-600	2,741	32,605	4,103	6,24,191	5,85,516
21		38,675	38,675	5,541	-	43,525	-	64,720	2,78,560	43,525	128	27,964	22,170	3,979	5,317	19,463	-2,591	990	32,605	4,103	5,05,657	4,66,983
22		38,675	38,675	5,541	-	43,525	-	64,720	2,78,560	43,525	128	27,964	22,170	2,565	2,566	13,903	-3,804	472	32,605	4,103	4,94,201	4,55,526
23		38,675	38,675	5,541	-	43,525	-	64,720	2,78,560	43,525	128	30,334	22,606	4,758	-1,350	8,053	-3,452	-256	32,605	4,103	5,33,400	4,94,725
24		38,675	38,675	5,541	3,924	43,525	88	64,720	2,78,560	43,525	128	32,704	67,383	8,027	5,734	11,921	-823	1,048	32,605	4,103	6,02,712	5,64,037
25		38,675	38,675	5,541	4,905	43,525	175	64,720	2,78,560	43,525	128	32,704	67,383	11,082	10,264	15,687	608	1,881	32,605	4,103	6,17,394	5,78,719
26		38,675	38,675	5,541	3,434	43,525	175	64,720	2,78,560	43,525	128	32,704	67,383	13,035	14,716	22,695	3,641	2,697	32,605	4,103	6,33,186	5,94,511
27		38,675	38,675	5,541	-	43,525	175	64,720	2,78,560	43,525	128	32,704	67,383	13,260	18,246	25,611	4,286	3,350	32,605	4,103	6,37,721	5,99,046
28		38,675	38,675	5,541	-	43,525	175	64,720	2,78,560	43,525	128	32,704	67,383	13,185	20,225	28,851	5,266	3,714	32,605	4,103	6,44,210	6,05,535

29		38,675	38,675	5,541	-	43,525	175	64,720	2,78,560	43,525	128	32,704	67,383	13,185	20,834	30,363	5,186	3,824	32,605	4,103	6,46,360	6,07,685
30		38,675	38,675	5,541	-	43,525	175	64,720	2,78,560	43,525	128	32,704	67,383	13,110	22,210	32,307	5,266	4,079	32,605	4,103	6,49,940	6,11,265
31		38,675	38,675	5,541	-	43,525	175	64,720	2,78,560	43,525	128	27,964	22,170	13,185	23,815	35,979	5,256	4,372	32,605	4,103	5,61,281	5,22,606
32		38,675	38,675	5,541	-	43,525	175	64,720	2,78,560	43,525	37,26,227	27,964	22,170	12,308	24,801	37,923	4,096	4,555	32,605	4,103	42,88,456	42,49,781
33		38,675	38,675	5,541	-	43,525	2,32,800	64,720	2,78,560	43,525	37,26,227	30,334	22,606	10,153	26,188	39,733	2,469	4,810	32,605	4,103	45,67,897	45,29,222
34		38,675	38,675	5,541	-	43,525	2,30,063	64,720	2,78,560	43,525	37,26,227	32,704	67,383	6,695	21,502	35,153	-600	3,966	32,605	4,103	45,95,671	45,56,996
35		38,675	38,675	5,541	-	43,525	-2,650	64,720	2,78,560	43,525	37,26,227	32,704	67,383	3,979	14,919	28,643	-2,591	2,741	32,605	4,103	43,43,933	43,05,258
36		38,675	38,675	5,541	3,924	43,525	-	64,720	2,78,560	43,525	37,26,227	32,704	67,383	2,565	5,317	18,763	-3,804	990	32,605	4,103	43,26,646	42,87,972
37		38,675	38,675	5,541	4,905	43,525	-	64,720	2,78,560	43,525	37,26,227	32,704	67,383	4,758	2,566	13,453	-3,452	472	32,605	4,103	43,21,594	42,82,919
38		38,675	38,675	5,541	3,434	43,525	-	64,720	2,78,560	43,525	37,26,227	32,704	67,383	8,027	-1,350	9,653	-823	-256	32,605	4,103	43,17,577	42,78,902

3 9		38, 67 5	38, 67 5	5,54 1	-	43, 525	88	64,72 0	2,78, 560	43,5 25	37,2 6,22 7	32,7 04	67,3 83	11,0 82	5,73 4	12,7 71	608	1,04 8	32,6 05	4,10 3	43,3 0,22 3	42,9 1,54 8
4 0		38, 67 5	38, 67 5	5,54 1	-	43, 525	175	64,72 0	2,78, 560	43,5 25	37,2 6,22 7	32,7 04	67,3 83	13,0 35	10,2 64	17,1 87	3,64 1	1,88 1	32,6 05	4,10 3	43,4 5,07 5	43,0 6,40 0
4 1		38, 67 5	38, 67 5	5,54 1	-	43, 525	175	64,72 0	2,78, 560	43,5 25	37,2 6,22 7	27,9 64	- 22,1 70	13,2 60	14,7 16	22,6 95	4,28 6	2,69 7	32,6 05	4,10 3	42,6 2,42 8	42,2 3,75 3
4 2		38, 67 5	38, 67 5	5,54 1	-	43, 525	175	64,72 0	2,78, 560	43,5 25	37,2 6,22 7	27,9 64	- 22,1 70	13,1 85	18,2 46	25,6 11	5,26 6	3,35 0	32,6 05	4,10 3	42,7 0,43 1	42,3 1,75 7
4 3		38, 67 5	38, 67 5	5,54 1	-	26, 199	175	64,72 0	2,43, 714	37,6 74	37,2 6,22 7	30,3 34	22,6 06	13,1 85	20,2 25	28,8 51	5,18 6	3,71 4	32,6 05	4,10 3	42,6 5,05 9	42,2 6,38 4
4 4		38, 67 5	38, 67 5	5,54 1	-	16, 610	175	64,72 0	66,0 04	15,3 35	37,2 6,22 7	32,7 04	67,3 83	13,1 10	20,8 34	30,3 63	5,26 6	3,82 4	32,6 05	4,10 3	41,0 4,80 3	40,6 6,12 9
4 5		38, 67 5	38, 67 5	5,54 1	-	5,3 95	175	64,72 0	13,1 56	2,84 5	37,2 6,22 7	32,7 04	67,3 83	13,1 85	22,2 10	32,3 07	5,25 6	4,07 9	32,6 05	4,10 3	40,3 1,88 9	39,9 3,21 5
4 6		38, 67 5	38, 67 5	5,54 1	-	16, 468	175	64,72 0	71,1 52	11,3 68	37,2 6,22 7	32,7 04	67,3 83	12,3 08	23,8 15	35,9 79	4,09 6	4,37 2	32,6 05	4,10 3	41,1 3,01 4	40,7 4,34 0
4 7		38, 67 5	38, 67 5	5,54 1	-	29, 418	175	64,72 0	1,81, 843	26,8 68	37,2 6,22 7	32,7 04	67,3 83	10,1 53	24,8 01	37,5 73	2,46 9	4,55 5	32,6 05	4,10 3	42,5 1,13 6	42,1 2,46 1

48		38,675	38,675	5,541	3,924	39,371	2,32,800	64,720	2,60,756	28,566	37,26,227	32,704	67,383	6,695	26,188	38,933	-600	4,810	32,605	4,103	45,74,725	45,36,050
49		38,675	38,675	5,541	4,905	43,525	2,30,063	64,720	2,78,560	29,569	37,26,227	32,704	67,383	3,979	21,502	33,503	-2,591	3,966	32,605	4,103	45,80,262	45,41,588
50		38,675	38,675	5,541	3,434	43,525	-2,650	64,720	2,78,560	29,569	37,26,227	32,704	67,383	2,565	14,919	27,943	-3,804	2,741	32,605	4,103	43,30,083	42,91,408
	38,67,476	16,24,340	54,91,815	2,01,778	27,669	14,98,725	13,65,101	24,88,144	95,87,411	14,60,008	7,07,92,644	14,82,898	15,92,577	4,22,071	6,68,462	11,42,394	62,653	1,22,767	12,10,348	1,93,607	EIR R	10.5 %
																				30,542	NPV	48,77,454
	3,867	1,238	5,105	1,46,372	15,407	119,116,4453	9,03,663	18,40,944	76,36,546	11,91,164	3,35,30,376	11,67,707	11,42,629	3,20,448	4,61,007	8,28,639	37,822	84,659	8,84,300	1,52,577	9,43,19,256	
																					B/C	17

Attachment 22: Operation and Maintenance

Operation and Maintenance

During the project period, the assets created through the project funds will be managed by the respective offices (District Management Units (DMUs) and Field Management Units (FMUs)) created as a part of institutional arrangements; however, after the project completion, the overall responsibility of operation and maintenance (O&M) for all the plantations and Joint Forest Management (JFM) areas will be with the West Bengal Forest Department (WBFD). Similarly, other assets like digital infrastructures such as web-GIS and MIS, buildings, vehicles, computers, and other equipment/ gadgets will also be maintained by the concerned offices of WBFD after the project completion. O&M responsibility for some of the assets/ infrastructure created at the community level will be with the Joint Forest Management Committees (JFMCs) or individual households. Other associate organisations like the West Bengal Zoo Authority (WBZA) will be responsible for assets supported through the project. O&M structure is provided in the table below.

Table 0.1 O&M Structure

Item/ Assets	Operator	Maintenance Mechanism
Component 1: Ecosystem based Climate Change Measures		
QPM and Central Nurseries	WBFD	<ul style="list-style-type: none"> • WBFD will make budgetary allocation and undertake maintenance work. • Territorial wing of WBFD will continue to produce and utilise QPM for plantations.
New Seed Production Areas (SPAs)	WBFD	<ul style="list-style-type: none"> • WBFD will make budgetary allocation and undertake maintenance work. • Research wing of WBFD will continue to produce quality seed and utilize it for production of QPM.
Plantations (ANR, Sal, Misc.)	WBFD	<ul style="list-style-type: none"> • WBFD will make budgetary allocation and undertake maintenance work. • Territorial wing of WBFD will continue to protect, maintain and manage the plantations.
Plantations (TPOFA)	Beneficiary Group (BG)	<ul style="list-style-type: none"> • BG of the respective plantation will maintain the plantation with their own resources.
SMC Works including Check dams	WBFD	<ul style="list-style-type: none"> • WBFD will make budgetary allocation and undertake maintenance work.
Eco-DRR Activities for Community Resilience	WBFD	<ul style="list-style-type: none"> • WBFD will make budgetary allocation and undertake maintenance work. • JFMCs will undertake the maintenance work, in case of a minor maintenance, while WBFD will undertake major maintenance.
Component 2: Biodiversity Conservation and Restoration		

Rescue Centre for Elephants	WBFD	<ul style="list-style-type: none"> • WBFD/ WBZA will make budgetary allocation and undertake maintenance work. • WBZA of WBFD will maintain and manage the Rescue Centre for the problem animals like elephants, tiger, leopard and bear and will publish behaviour studies for learning purpose.
Veterinary Facility in Sundarbans	WBFD	<ul style="list-style-type: none"> • WBFD/ WBZA will make budgetary allocation and undertake maintenance work. • Wildlife wing of the WBFD will maintain and manage the facility and continue to utilize for treating the wildlife.
Studies on Species Conservation	WBFD	<ul style="list-style-type: none"> • WBFD will make budgetary allocation and undertake initiatives out of the recommendation of the studies. • WBFD will maintain and manage the reports/ studies in the departmental library and website of WBFD and WB-FBCCCR, and will publish articles out of the studies for learning purposes.
Plantations in PAs (RET etc.)	WBFD	<ul style="list-style-type: none"> • WBFD will make budgetary allocation and undertake maintenance work. • Wildlife wing of WBFD will continue to protect, maintain, and manage the plantations
Human Wildlife Conflict	WBFD	<ul style="list-style-type: none"> • WBFD will make budgetary allocation and undertake maintenance and replacement work.

Item/ Assets	Operator	Maintenance Mechanism
Component 3: Livelihood Improvement		
Micro Plans	WBFD/ JFMCs	<ul style="list-style-type: none"> • WBFD will make the budgetary arrangement for funding the Micro Plans for JFM activities. • JFMCs will take part in the maintenance activities, as well as update micro plans every five years prior to expiry.
Community Development Activities/ Assets created under EPA	JFMCs	<ul style="list-style-type: none"> • The cost of O&M of such assets will be met by JFMCs utilising the 5% maintenance fund earmarked at the time of creation of the community development activities or by the contribution of the members. • Users' fee shall also be charged and

		spent for O&M, if applicable.
Revolving Fund for Income Generation	JFMCs	<ul style="list-style-type: none"> As per the operation manual of the Community Revolving Fund, the respective JFMCs will maintain the revolving fund. JFMCs will continue to support the income generation activities of SHGs by rotating the grant-fund extended by the project. WBFD will continue to guide and support JFMCs
Component 4: Institutional Strengthening		
JFM Boundary Pillars	JFMCs/ WBFD	<ul style="list-style-type: none"> WBFD will make the budgetary arrangement for maintaining the pillars. JFMCs will keep watching the demarcations and the boundary pillars and will take part in the maintenance activities along with the Forest Department.
Web-GIS/ MIS Software and Spatial Data/ Imageries	WBFD	<ul style="list-style-type: none"> WBFD will make budgetary allocation and undertake maintenance of the project investments for strengthening its GIS and MIS. WBFD will continue to support trained human resources to enhance the inhouse capacities to utilize web-GIS assets.
Assets of PMU, DMUs, and FMUs (vehicles, speed boats, buildings, equipment, devices, UAV)	WBFD	<ul style="list-style-type: none"> Inventory of asset and buildings created under the project will be prepared with WBFD. Work orders and completion certificates will be compiled and handed over to WBFD prior to project closure. Once the project is completed, these will be transferred to WBFD, and shall be maintained by WBFD thereafter.
Human Resources engaged on Contractual Basis	WBFD	<ul style="list-style-type: none"> The contracts for the engagement will expire with the closure of the project. WBFD or the state government may decide either to dismiss the future engagement or may utilize the services of the trained human resources in other on-going projects or programme. WBFD may engage staff as required.
PMU (Society)	WBFD	<ul style="list-style-type: none"> As per the decision taken by HPC/ GB and the General Body of project, as well as by the state government, PMU may either be closed according to the memorandum of association or may take-up other projects in the forestry sector.

Source: JICA Survey Team

Attachment 23: Time Bound Action Plan									
		Agreed Action	Responsible Person (Agency)	Executer	Target Date		Indicators	Remarks	
					Start	Completion			
		Supplimental Mission (for Green Laboratory, DX etc.)	WBFD/ JICA	WBFD/ JICA	1-Jan-2023	31-Mar-2023		The mentioned schedule is tentative.	
Loan Agreement		L/A Signing	WBFD/ JICA	WBFD/ JICA	28-Mar-2023	31-Mar-2023	Loan Agreement		
Institutional set-up		Establishment of HPC/GB	WBFD	WBFD	1-Apr-2023	30-Jun-2023	Govt. Notification		
		Establishment of PMU/ DMU/ FMU	WBFD	WBFD	1-Apr-2023	30-Jun-2023	Govt. Notification		
		Procurement of Staff and deployment	PMU	PMU	1-Apr-2023	1-Apr-2024	Deployment letters		
		Preparation of Annual Plan and Allocation of Annual Budget for FY2023/24	PMU	PMU	3-Apr-2023	7-Apr-2023	Budget for FY 2023-24		
		Procurement and establishing customized accounting software	PMU	PMU	1-May-2023	1-Oct-2023	SOEs generated through software		
		Establishing M&E/ MIS systems	PMU	PMU	1-Apr-2024	30-Sep-2024	M&E/ MIS Manual	MIS will be established under Monitoring and Evaluation of CPMU.	
Procurement of Consultant		Preparation of RFP	PMU	PMU	1-Feb-2023	30-Apr-2023	RFP		
		No objection by JICA	JICA	JICA	1-May-2023	31-May-2023	No objection letter from JICA		

		Advertising (RFP Announcement/ Invitation to Bid)	PMU	PMU	1-Jun-2023	31-Jul-2023	RFP announcement		
		Technical bid evaluation	PMU	PMU	1-Aug-2023	31-Aug-2023	Evaluation Result Intimation Letter		
		No objection by JICA	JICA	JICA	1-Sep-2023	30-Sep-2023	No objection letter from JICA		
		Price bid evaluation	PMU	PMU	1-Oct-2023	10-Oct-2023	Evaluation Result Intimation Letter	JICA added this according to standard procurement schedule	
		No objection by JICA	JICA	JICA	11-Oct-2023	31-Oct-2023	No objection letter from JICA		
		Contract Negotiation	PMU	PMU	1-Nov-2023	15-Nov-2023	Contract		
		No objection by JICA	JICA	JICA	16-Nov-2023	30-Nov-2023	No objection letter from JICA		
		Consulting services commencement	PMU	PMC	1-Dec-2023	5-Dec-2023	Signed Contract		
	Reports, Guidelines & Manuals	Revised Project Operation Manual	WBFD	WBFD	1-Apr-2023	30-Apr-2024	Revised project operation manual		
		Financial Management Guideline & M&E Manual	PMU	PMU/ PMC	1-Apr-2023	30-Apr-2024	Financial Management Guideline & M&E Manual		
		Social Audit Manual	PMU	PMU/ PMC	1-Apr-2023	30-Apr-2024	Social Audit Manual		
		Training Needs Assessment (Procurement)	PMU	PMU	1-Apr-2023	30-Apr-2024	Technical Agency procured		

			Training Needs Assessment	PMU	Technical Agency/ PMU/ PMC	1-Apr-2023	30-Apr-2024	TNA report	For PMC to support the TNA, procurement process needs to be expedited.	
			Guideline for preparation of Range Forest Project Implementation Plan	PMU	PMU	1-Apr-2023	30-Apr-2024	Range Forest Project Implementation Plan Guideline	For PMC to support the TNA, procurement process needs to be expedited.	
			Revised Micro Plan Manual	PMU	PMU/ PMC	1-Apr-2023	30-Apr-2024	Revised Micro Plan Manual	For PMC to support the TNA, procurement process needs to be expedited.	
			Revised JFMC Management Manual	PMU	PMU/ PMC	1-Apr-2023	30-Apr-2024	Revised JFMC management manual	For PMC to support the TNA, procurement process needs to be expedited.	
			Social Audit Manual	PMU	PMU/ PMC	1-Apr-2023	30-Apr-2024	Social Audit Manual	For PMC to support the TNA, procurement process needs to be expedited.	
			IGA Fund Operation Manual	PMU	PMU/ PMC	1-Apr-2023	30-Apr-2024	Revised Micro Plan Manual	For PMC to support the TNA,	

								procurement process needs to be expedited.	
		EPA/ CDA Guideline	PMU	PMU/ PMC	1-Apr-2023	30-Apr-2024	EPA/ CDA Guideline	For PMC to support the TNA, procurement process needs to be expedited.	
		O&M Guideline for Community Development Activities	PMU	PMU/ PMC	1-Apr-2023	30-Apr-2024	O&M Guideline for Community Infrastructure	For PMC to support the TNA, procurement process needs to be expedited.	
		Guideline for Gender Mainstreaming	PMU	PMU/ PMC	1-Apr-2023	30-Apr-2024	Guideline for Gender Mainstreaming	For PMC to support the TNA, procurement process needs to be expedited.	
	Component 1: Ecosystem based Climate Change Measures	1.1 Hill & North Bengal Landscape							
		1.1.1 Production of Quality Planting Material							
		1.1.1.0 Site Selection	PMU	PMU/ DMU	1-May-2023	30-Jun-2023	List of central nurseries to be supported		
		1.1.1.1 Upgrading Central Nurseries	PMU	DMU	1-May-2023	30-Sep-2024			
		1.1.1.2 Production of Quality Planting Materials	PMU	DMU	1-Oct-2023	30-Jun-2027			
		1.1.2 Improving quality of Forests							

		1.1.2.0 Site Selection	PMU	DMU/ FMU	1-May-2023	30-Jun-2023	List of selected sites		
		1.1.2.1 Creation of new Seed Production Area (SPAs) & Maintenance	PMU	DMU/ FMU	1-Jun-2024	31-Mar-2030			
		1.1.2.2. Range Forest Project Implementation Plan							
		Batch 1	PMU	DMU/ FMU	1-Jul-2023	31-Aug-2023	Range Forest Project Implementation Plan		
		Batch 2	PMU	DMU/ FMU	1-Jul-2024	31-Aug-2024	Range Forest Project Implementation Plan		
		Batch 3	PMU	DMU/ FMU	1-Jul-2025	31-Aug-2025	Range Forest Project Implementation Plan		
		1.1.2.3 Plantation in Degraded Forest Areas							
		Site selection	PMU	DMU/ FMU	1-Oct-2023	31-Dec-2023	List of selected sites		
		a) Sal Plantation							
		Batch 1	PMU	DMU/ FMU/ JFMC	1-Jan-2025	31-Mar-2029			
		Batch 2	PMU	DMU/ FMU/ JFMC	1-Jan-2026	31-Mar-2030			
		Batch 3	PMU	DMU/ FMU/ JFMC	1-Jan-2027	30-Nov-2030			
		b) Misc. Plantation							
		Batch 1	PMU	DMU/ FMU/ JFMC	1-Jan-2025	31-Mar-2029			
		Batch 2	PMU	DMU/ FMU/ JFMC	1-Jan-2026	31-Mar-2030			
		Batch 3	PMU	DMU/ FMU/ JFMC	1-Jan-2027	30-Nov-2030			

		1.1.2.4 TPOFA Plantation						
		Batch 1 (including site identification)	PMU	DMU/ FMU/ Beneficiary Group	1-Apr-2024	28-Feb-2029		Site identification shall be completed by 31 May 2024
		Batch 2 (including site identification)	PMU	DMU/ FMU/ Beneficiary Group	1-Apr-2025	28-Feb-2030		Site identification shall be completed by 31 May 2025
		Batch 3 (including site identification)	PMU	DMU/ FMU/ Beneficiary Group	1-Apr-2026	28-Feb-2031		Site identification shall be completed by 31 May 2026
		1.1.3 Eco-DRR activities						
		1.1.3.1 Embankment protection (inside PAs)						
		a) Large Check Dam	PMU	DMU/ Contractor	1-Sep-2025	31-Mar-2026		Including maintenance of 24 months
		b) Medium Check Dam						
		Batch 1	PMU	DMU/ Contractor	1-Sep-2024	31-Mar-2026		including 3 months site selection and preparatory works and 12 months of maintenance
		Batch 2	PMU	DMU/ Contractor	1-Sep-2025	31-Mar-2027		including 3 months site selection and preparatory works and 12

								months of maintenance	
		Batch 3	PMU	DMU/ Contractor	1-Sep-2026	31-Mar-2028		including 3 months site selection and preparatory works and 12 months of maintenance	
		c) Small Check Dam							
		Batch 1	PMU	DMU/ Contractor	1-Sep-2024	31-Mar-2026		including 3 months site selection and preparatory works and 12 months of maintenance	
		Batch 2	PMU	DMU/ Contractor	1-Sep-2025	31-Mar-2027		including 3 months site selection and preparatory works and 12 months of maintenance	
		Batch 3	PMU	DMU/ Contractor	1-Sep-2026	31-Mar-2028		including 3 months site selection and preparatory works and 12 months of maintenance	
		d) Grass Planting along the Outlets							
		a) Large Check Dam	PMU	DMU/ FMU/ JFMC	1-Apr-2026	30-Jun-2026			
		b) Medium Check Dam & c) Small Check Dam							

		Batch 1	PMU	DMU/ FMU/ JFMC	1-Apr- 2025	30-Jun- 2025			
		Batch 2	PMU	DMU/ FMU/ JFMC	1-Apr- 2026	30-Jun- 2026			
		Batch 3	PMU	DMU/ FMU/ JFMC	1-Apr- 2027	30-Jun- 2027			
		e) Bunding along the Embankment	PMU	DMU/ FMU/ JFMC	1-Apr- 2026	30-Sep- 2026			
		1.1.4 Green Laboratories							
		1.1.4.1 Nature Study in forests by Students (National/ International)	PMU	PMU/ DMU	1-Aug- 2026	31-Oct- 2028	Reports	Intermittently Implemented	
		1.1.4.2 Nature and Forests Programme Engaging Education/ Research Institutions	PMU	PMU/ DMU	1-Nov- 2026	31-Jan- 2029	Reports	Intermittently Implemented	
		1. Dry Lateritic & Alluvial 2 Landscape							
		1.2.1 Production of Quality Planting Material							
		1.2.1.0 Site Selection	PMU	PMU/ DMU	1-May- 2023	30-Jun- 2023	List of central nurseries to be supported		
		1.2.1.1 Upgrading Central Nurseries and Maintenance	PMU	DMU	1-Jul- 2023	30-Sep- 2024			
		1.2.1.2 Production of Quality Planting Materials	PMU	DMU	1-Oct- 2023	30-Jun- 2027			
		1.2.2 Improving Quality of Forests							
		1.2.2.0 Site Selection	PMU	DMU/ FMU	1-Mar- 2024	31-May- 2024	List of selected sites		
		1.2.2.1. Range Forest Project Implementation Plan							
		Batch 1	PMU	DMU/ FMU	1-Jul- 2023	31-Aug- 2023	Range Forest Project Implementation Plan		

		Batch 2	PMU	DMU/ FMU	1-Jul-2024	31-Aug-2024	Range Forest Project Implementation Plan		
		Batch 3	PMU	DMU/ FMU	1-Jul-2025	31-Aug-2025	Range Forest Project Implementation Plan		
		1.2.2.2. ANR of degraded Sal forests (Coppicing)							
		Batch 1	PMU	DMU/ FMU/ JFMC	1-Nov-2024	28-Feb-2025		Including site selection; Maintenance in 4th year	
		Batch 2	PMU	DMU/ FMU/ JFMC	1-Nov-2025	28-Feb-2026		Including site selection; Maintenance in 4th year	
		1.2.2.3 Plantation in Degraded Forest Areas							
		Site selection	PMU	DMU/ FMU	1-Oct-2023	31-Dec-2023	List of selected sites		
		a) Sal Plantation							
		Batch 1	PMU	DMU/ FMU	1-Jan-2025	31-Mar-2029	List of plantation area		
		Batch 2	PMU	DMU/ FMU	1-Jan-2026	31-Mar-2030	List of plantation area		
		Batch 3	PMU	DMU/ FMU	1-Jan-2027	30-Nov-2030	List of plantation area		
		b) Misc. Plantation							
		Batch 1	PMU	DMU/ FMU	1-Jan-2025	31-Mar-2029	List of plantation area		
		Batch 2	PMU	DMU/ FMU	1-Jan-2026	31-Mar-2030	List of plantation area		
		Batch 3	PMU	DMU/ FMU	1-Jan-2027	30-Nov-2030	List of plantation area		
		1.2.2.4 TPOFA Plantation							

		Batch 1 (including site identification)	PMU	DMU/ FMU/ Beneficiary Group	1-Apr-2024	28-Feb-2029	List of plantation area	Site identification shall be completed by 31 May 2024	
		Batch 2 (including site identification)	PMU	DMU/ FMU/ Beneficiary Group	1-Apr-2025	28-Feb-2030	List of plantation area	Site identification shall be completed by 31 May 2025	
		Batch 3 (including site identification)	PMU	DMU/ FMU/ Beneficiary Group	1-Apr-2026	28-Feb-2031	List of plantation area	Site identification shall be completed by 31 May 2026	
		1.1.4 Green Laboratories							
		1.1.4.1 Nature Study in forests by Students (National/ International)	PMU	PMU/ DMU	1-Aug-2026	31-Oct-2028	Reports	Intermittently Implemented	
		1.2.3 Eco-DRR activities to strengthen forestry operation							
		1.2.3.0 Procurement of Technical Agency	PMU	PMU	1-May-2023	30-Jun-2023	Contract of Technical Agency		
		1.2.3.1 GIS Based CAT Plans as pilot for SMC works							
		a) GIS based CAT Plan Preparation	PMU	PMU	1-May-2023	31-Mar-2026	CAT Plans		
		b) SMC Works based on CAT Plan					SMC Works created		
		Batch 1	PMU	DMU/ FMU/ JFMC	1-Oct-2025	31-Mar-2026		Preparatory works including site selection to be completed by 31st Dec 2025	

		Batch 2	PMU	DMU/ FMU/ JFMC	1-Oct-2026	31-Mar-2027		Preparatory works including site selection to be completed by 31st Dec 2026	
		Batch 3	PMU	DMU/ FMU/ JFMC	1-Oct-2027	31-Mar-2028		Preparatory works including site selection to be completed by 31st Dec 2027	
		1.2.4 Green Laboratory Initiatives	PMU	PMU	1-Apr-2024	31-Mar-2027			
		1.3 Deltaic Landscape							
		1.3.1 Community resilience measures in Sundarbans	PMU	DMU/ FMU	1-Sep-2023	31-Jan-2026	Prototype for dissemination; List of locations where the structure is install	Pilot activities are to be completed by 31 Mar 2025	
		1.3.2 Green Laboratories	PMU	PMU/ DMU	1-Aug-2026	31-Jan-2029	Reports	Intermittently Implemented	
	Component 2:	2.1 Hill & North Bengal Landscape							
	Biodiversity Conservation and Restoration	2.1.1 Human Wildlife Conflict Mitigation							
		2.1.1.1 Stress Induce Conflict Risk Reduction by Wild Animals	PMU	DMU/ FMU/ JFMC	1-Apr-2024	31-Mar-2029	Site description; Installed Fence	Site identification and preparatory works shall be completed by 31 March 2025	
		a) Control of Straying of Wild Animals	PMU	DMU/ FMU/ JFMC	1-Apr-2023	31-Mar-2029	Inventory of goods	Procurement to be completed	

								by 31 Mar 2024	
		2.1.1.2 Support communities for Human Wildlife Mitigation	PMU	DMU/ FMU/ JFMC	1-Oct-2023	30-Jun-2025	List of Rapid Response Team	Preparatory works to be completed by 31 Dec 2023	
		2.1.1.3 Pilot (Eco Sensitive Zone) Plantation with Non-Palatable/ Repulsive Species	PMU	DMU/ FMU/ JFMC	1-Apr-2023	31-Mar-2029	List of species and sites	Preparatory works to be completed by 30 Sep 2024	
		2.1.2 Species Conservation Programme							
		2.1.2.1 Species Recovery Programme	PMU	DMU/ FMU/ JFMC	1-Oct-2023	31-Mar-2025	List of sites and species	Preparatory works to be completed by 31 Dec 2025	
		2.1.3 Studies on Wild Animals and their Behavior	PMU	Technical Agency	1-Apr-2024	31-Mar-2026	Report	Procurement of technical agency shall be completed by 31 Mar 2023	
		2. Dry Lateritic & Alluvial Landscape							
		2.2.1 Biodiversity Conservation through People's Participation							
		2.2.1.1 Bethadahari Wildlife Sanctuary	PMU	DMU/ FMU/ JFMC	1-Apr-2023	31-Mar-2028	Monitoring Report		
		2.2.1.2 Bllavpur Wildlife Sanctuary	PMU	DMU/ FMU/ JFMC	1-Apr-2023	31-Mar-2028	Monitoring Report		
		2.2.2 Conservation of Smaller Mammals							
		2.2.2.1 Habit Improvement	PMU	DMU/ FMU/ JFMC	1-Apr-2024	31-Mar-2029	Monitoring Report		
		2.2.2.2 Conservation awareness generation	PMU	DMU/ FMU	1-Apr-2024	31-Mar-2029	Materials developed, monitoring report		

		2.2.3 Human Wildlife Conflict Mitigation							
		2.2.3.1 Rescue Centre for Elephants including study of their behavior	WBZA	WBZA	1-Jul-2023	31-Mar-2027	Enclosure, monitoring report		
		2.2.3.2 Stress induce conflict risk reduction by Wild Animals	PMU	DMU/ FMU/ JFMC	1-Oct-2023	31-Mar-2027	List of equipment & materials		
		2.2.3.3 Tracking of elephant route through radio collaring	PMU	PMU/ DMU/ FMU	1-Oct-2026	31-Mar-2029	List of equipment & materials		
		2.2.3.4 Enhancement of tranquilizer equipment for animals to be kept in Airavat vans	PMU	PMU/ DMU	1-Oct-2023	31-Mar-2025	List of equipment & materials		
		2.2.3.5 Installation of Early Warning System (EWS) for wild elephants	PMU	PMU/ DMU	1-Oct-2023	31-Mar-2025	List of equipment & materials		
		2.2.3.6 Development of software application for compensation for depredation by wild animals	PMU	PMU	1-Oct-2023	31-Mar-2025	Contract of Vendor	Procurement of Vender must be completed by 1 Oct 2023.	
		2.2.3.7 Installation of Elephant Proof Trench (EPT) in South-West Bengal	PMU	DMU/ FMU/ JFMC	1-Oct-2023	31-Mar-2025	EPT established in km/ Man days generated for JFMC members		
		2.2.4 Species Conservation Programme	PMU	Contractor	1-Oct-2023	31-Mar-2028	Contract, Reports	Procurement of the technical agency shall be completed between Jan 2023 and Mar 2023	
		2.2.4.1 Dolphin conservation programme	PMU	DMU/ FMU	1-Oct-2023	30-Sep-2028	Reports		
		2.2.4.2 Breeding and releasing of Indian Pangolin	WBZA	WBZA	1-Oct-2023	30-Sep-2029	Reports		

		2.2.4.3 Breeding and releasing of Fishing Cat	WBZA	WBZA	1-Oct-2023	30-Sep-2029	Reports		
		2.2.4.4 Breeding and releasing of Indian Vulture	WBZA	WBZA	1-Oct-2023	30-Sep-2028	Reports		
		2.2.4.5 Species recovery programme for local RET (South)	PMU	DMU/ FMU	1-Oct-2023	31-Mar-2028	Reports		
	2.3	Deltaic Zone							
		2.3.1 Biodiversity Conservation through People's Participation							
		2.3.1.1 Chintamani Kar Bir Sanctuary	PMU	DMU	1-Apr-2023	30-Sep-2028	Monitoring Reports		
		2.3.1.2 Bibhutibhushan Wildlife Sanctuary	PMU	DMU	1-Apr-2023	30-Sep-2028	Monitoring Reports		
		2.3.2 Human Wildlife Conflict Mitigation							
		2.3.2.1 Stress induce conflict risk reduction by wild animals	PMU	DMU	1-Apr-2024	31-Dec-2028	Monitoring Report		
		2.3.2.2 Veterinary facility in Sundarbans	PMU	DMU	1-Apr-2024	30-Sep-2028	Monitoring Report		
		2.3.3 Studies on Wild Animals and their Behavior	PMU	Technical Agency	1-Jul-2024	30-Sep-2026	Monitoring Report		
	3.0	Preparation of manuals and guidelines	PMU	PMU	1-Jul-2023	31-Dec-2023	Manuals/ Guidelines	Supported by PMC	
		Procurement of Technical Agency for management of IGA fund	PMU	PMU/ PMC	1-Oct-2024	31-Mar-2028	Contract		
		Finalization of selection criteria of JFMCs & Selection of JFMCs	PMU	DMU/ FMU	1-Jul-2023	31-Dec-2023	List of JFMCs	The decision with regards to number of batches needs to be discussed and decided between WBFD and JICA India Office before the	

								commencement of the selection of JFMCs for the first batch	
	3.1	Hill & North Bengal Landscape							
		3.1.1 Preparatory Activities with JFMCs							
		(Community mobilization, reorganization/ reconstitution of JFMCs, boundary confirmation, Familiarization of project)							
		Batch 1	PMU	DMU/ FMU	1-Apr-2024	31-Mar-2024	JFMC Resolution		
		Batch 2	PMU	DMU/ FMU	1-Apr-2025	31-Mar-2025	JFMC Resolution		
		Batch 3	PMU	DMU/ FMU	1-Apr-2026	31-Mar-2026	JFMC Resolution		
		3.1.1.4 Micro Planning							
		Batch 1	PMU	DMU/ FMU	01-Apr-24	30-Jun-24			
		Batch 2	PMU	DMU/ FMU	01-Apr-25	30-Jun-25			
		Batch 3	PMU	DMU/ FMU	01-Apr-26	30-Jun-26			
		3.1.1.5 EPA/ CDA							
		Batch 1	PMU	DMU/ FMU/ JFMC	01-Jul-24	30-Jun-25			
		Batch 2	PMU	DMU/ FMU/ JFMC	01-Jul-25	30-Jun-26			
		Batch 3	PMU	DMU/ FMU/ JFMC	01-Jul-26	30-Jun-27			

		3.1.2 Support for Income Generation							
		Batch 1	PMU	DMU/ FMU/ JFMC/ Technical Agency	01-Apr-25	31-Mar-28			
		Batch 2	PMU	DMU/ FMU/ JFMC/ Technical Agency	01-Apr-26	31-Mar-29			
		Batch 3	PMU	DMU/ FMU/ JFMC/ Technical Agency	01-Apr-27	31-Mar-30			
		3.1.3 Support for Community Well Being (Traditional Healers)							
		Batch 1	PMU	DMU/ FMU	01-Apr-24	31-Mar-26			
		Batch 2	PMU	DMU/ FMU	01-Apr-25	31-Mar-27			
		Batch 3	PMU	DMU/ FMU	01-Apr-26	31-Mar-28			
		3.1.4 Support for Community Mobilization (Extension Workers)	PMU	DMU					
		Batch 1	PMU	DMU/ FMU	01-Apr-24	31-Mar-27			
		Batch 2	PMU	DMU/ FMU	01-Apr-25	31-Mar-28			
		Batch 3	PMU	DMU/ FMU	01-Apr-26	31-Mar-29			
	3.2	Dry Lateritic & Alluvial Landscape							
		3.2.1 Preparatory Activities with JFMCs	Same as 3.1.1						

		3.2.2 Support for Income Generation					Same as 3.1.2		
		3.2.3 Support for Community Well Being (Traditional Healers)					Same as in 3.1.3		
		3.2.4 Support for Community Mobilization (Extension Workers)					Same as in 3.1.4		
	3.3	Deltaic Landscape							
		3.2.1 Preparatory Activities with JFMCs					Same as 3.1.1		
		3.2.2 Support for Income Generation					Same as 3.1.2		
		3.2.3 Support for Community Mobilization (Extension Workers)					Same as in 3.1.4		
	Component 4: Institutional Strengthening								
	4.1	Strengthening Project Management							
		4.1.1 Demarcation of JFMC boundary							
		i) Procurement of Mouza sheet							
		Batch 1	PMU	PMU	01-Oct-23	31-Oct-23	List of mouza sheets procured		
		Batch 2	PMU	PMU	01-Sep-24	30-Sep-24			
		Batch 3	PMU	PMU	01-Sep-25	30-Sep-25			
		ii) Procurement of GPS	PMU	PMU	01-Oct-23	31-Oct-23	List of procured GPSs	Procurement is scheduled under 4.3.1.4.	
		iii) Outsourced digitization of JFMC boundary							
		Batch 1	PMU	PMU	01-Nov-23	31-Jan-24	Digitized JFMC Maps	Procurement of vender is	

								scheduled under 4.3.1.4.	
		Batch 2	PMU	PMU	01-Oct-24	31-Dec-24	Digitized JFMC Maps	Procurement of vender is scheduled under 4.3.1.4.	
		Batch 3	PMU	PMU	01-Oct-25	31-Dec-25	Digitized JFMC Maps	Procurement of vender is scheduled under 4.3.1.4.	
		4.1.1.2 Development of web-GIS platform of WBFD	PMU	Vendor	01-Oct-23	30-Apr-24	Contract/ web-GIS platform	Procurement of vender is scheduled under 4.3.1.4.	
		4.1.1.3 Upgrade of mobile application (e-monitoring) to add function of e-plantation journal including training	PMU	Vendor	01-Oct-23	31-Mar-24	Contract/ upgraded app.	Procurement of vender is scheduled under 4.3.1.4.	
		4.1.1.4 Development of project MIS platform linked to web GIS	PMU	Vendor	01-Oct-23	31-Mar-24	Contract/ MIS linked with GIS	Procurement of vender is scheduled under 4.3.1.4.	
		4.1.1.5 Training of field officers (range/ beat officers ⁹ in the target area on the operation of GPS and mobile application	PMU	PMC	01-Apr-24	31-May-26	Training Report	To be conducted batch wise. Budgeted under 4.2.2.	
		4.1.1.6 Training of DMUs/ FMUs on the operation of MIS and mobile application	PMU	PMC	01-Apr-24	31-May-26	Training Report	To be conducted batch wise. Budgeted under 4.2.3.	
		4.1.1.7 Site verification and boundary pillar setting	PMU	DMU/ FMU	01-Jul-24	30-Sep	Reports		
		Boundary pillar setting							
		Batch 1	PMU	DMU/ FMU/ JFMC	01-Mar-24	31-May-24	Pillars posted		

		Batch 2	PMU	DMU/ FMU/ JFMC	01-Feb-25	30-Apr-25	Pillars posted		
		Batch 3	PMU	DMU/ FMU/ JFMC	01-Feb-26	30-Apr-26	Pillars posted		
		4.1.1.8 Pilot Project for use of UAV for development of technical guideline	PMU	PMU/ PMC	01-Apr-24	30-Sep-25	Guideline		
		4.1.2 Mobility							
		Procurement	PMU	PMU	01-Apr-23	31-Oct-23	List of procured vehicles		
		4.1.3 Building							
		Procurement of Contractor	PMU	PMU	01-Jul-23	31-Dec-23	Contract		
		Construction Works	PMU	Contractor	01-Jan-24	31-Mar-26	Building		
		4.1.4 Project Contractual Staff							
		Recruitment	PMU	PMU/ DMU	01-Apr-23	31-Oct-23	List of recruited personnel		
		4.1.5 Digital Strengthening	PMU	PMU/ DMU	01-Apr-23	31-Mar-31	List of equipment procured		
		4.2 Capacity Development							
		4.2.1 Training Plan							
		Procurement of Technical Agency for Training Needs Assessment (TNA)	PMU	PMU	1-Jul-2023	30-Sep-2023	Contract/ TNA Report		

		Training Plan	PMU	PMU/ PMC	1-Oct-2023	31-Dec-2023	Training Plan		
		Annual Training Calendar	PMU	PMU/ PMC	01-Feb-23	31-Mar-30	Annual Training Calendars	To be prepared annually between Feb - May of each FY up to 2026; 2027 onwards it can be prepared for any remaining training activities	
		4.2.2 Training of Forest Officers (DCF & above ranks)							
		i) Specialized Training (20 batches)	PMU	PMU/ PMC	01-Jan-24	31-Mar-28	Training Reports		
		ii) Exposure Trips (10 batches)	PMU	PMU/ PMC	01-Sep-25	31-Aug-27	Training Reports		
		iii) International training (3 batches)	PMU	PMU/ PMC	01-Nov-24	31-Jan-27	Training Reports		
		4.2.3 Training of Forest Officers/ Frontline Staff (Ranger & below)							
		i) Specialized Training (30 batches)	PMU	PMU/ PMC	01-Jan-24	31-Mar-28	Training Reports		
		ii) Exposure Trips (10 batches)	PMU	PMU/ PMC	01-Sep-25	31-Aug-27	Training Reports		
		iii) International training (Regional) (5 batches)	PMU	PMU/ PMC	01-Nov-24	31-Jan-27	Training Reports		
		4.2.4 National Workshop (3 days)							

			Preparation	PMU	PMU	01-Mar-27	31-Dec-27	Invitations to the participants	PMU should indicate its willingness to host the workshop in the National Workshop in 2027.	
			National Workshop	PMU	PMU	01-Jan-28	28-Feb-28	Proceedings		
			4.2.5 Trainings for JFMC/ SHG members							
			i) JFMC members (120 batches)	PMU	DMU/ FMU/ Extension Workers	01-Apr-24	31-Aug-26	Training Reports	Trainings to be completed before the micro planning.	
			ii) SHG members (90 batches)		DMU/ FMU/ Extension Workers/ Technical Agency	01-Jan-25	31-Mar-26	Training Reports	Basic training to be done before the releasing of IGA support fund. Skills/ specialized training can be scheduled as required.	
			4.3 Monitoring & Evaluation							
			4.3.1 Progress Monitoring							
			4.3.1.1 Biodiversity Monitoring System (3 times)	PMU	PMU/ DMU	01-Nov-25	28-Feb-31	Monitoring Reports	3 times (FY 2025, FY 2027, FY 2030)	
			3.4.1.2 Concurrent Monitoring & Periodic Review	PMU	PMU/ DMU	01-Apr-24	30-Jun-30	Monitoring Reports	To be conducted	

								annually between Apr - Jun	
		4.3.1.3 Community Self Monitoring	PMU	JFMCs/DMU/ FMU/ Extension Workers	01-Apr-24	30-Jun-30	Monitoring Reports	To be conducted annually between Apr - Jun	
		4.3.1.4 Computerized MIS & GIS/ applications/ UAV monitoring	PMU	PMU/ DMU/ FMU	01-Apr-24	30-Jun-30	Monitoring Reports	To be conducted annually between Apr - Jun	
		i) Web-based GIS linked to MIS system	PMU	PMU	01-Oct-23	31-Mar-24	Report of Vender/ System Developed	Vender procurement to be undertaken ahead of the work.	
		ii) Procurement of GPS	PMU	PMU	01-Oct-23	31-Oct-23	List of GPSs		
		iii) Mobile app- upgrading e-monitoring for e-plantation journal	PMU	PMU	01-Oct-23	31-Jan-23	Report of Vender/ System Developed	Vender procurement to be undertaken ahead of the work.	
		iv) Development of project MIS platform linked to web-GIS & mobile apps	PMU	PMU	01-Oct-23	30-Apr-24	Report of Vender/ System Developed	Vender procurement to be undertaken ahead of the work.	
		4.3.1.5 Computerized accounting system	PMU	PMU/ DMU/ FMU	1-May-2023	31-Oct-2023	Financial Reports		
		4.3.1.6 annual Strategy Planning & Review Workshop	PMU	PMU/ DMU/ FMU	01-Feb-24	31-Mar-31	Proceedings	To be conducted annually between Feb and Apr	

		4.3.2 Impact Evaluation						
		4.3.2.1 Annual Outcome Assessment (DMU level)	PMU	DMU	01-May-24	30-Jun-30	Reports	To be conducted annually between May - Jun
		4.3.2.2 Baseline and Impact Survey (Socio-Economic/ Physical)						
		i) Baseline						
		Procurement of Technical Agency	PMU	PMU	01-Jun-24	30-Nov-24	Contract	
		Survey	PMU	Technical Agency	01-Dec-24	31-May-24	Baseline Survey Report	
		ii) Mid Term						
		Procurement of Technical Agency	PMU	PMU	01-Jun-26	30-Nov-26	Contract	
		Survey	PMU	Technical Agency	01-Dec-26	31-May-27	Mid Term Report	
		iii) End Term						
		Procurement of Technical Agency	PMU	PMU	01-Jun-26	30-Nov-26	Contract	
		Survey	PMU	Technical Agency	01-Apr-30	31-May-27	End Term Report	
		4.3.2.3 Thematic Short Studies	PMU	PMU	01-Nov-24	31-Jan-28	Study Reports	Can be scheduled as per requirement

		4.3.2.4 Environmental Impact Assessment							
		Screening criteria and monitoring plan	PMU	PMU/ PMC	01-Nov-23	31-Mar-24	Screening criteria and monitoring plan		
		Environmental Monitoring	PMU	DMU/ FMU/ PMC	01-Jun-24	31-Mar-28	Monitoring Reports	To be undertake quarterly	
		4.3.3 Audits							
		a) Statutory Financial Audits	PMU	Contactor/ PMU	01-Apr-24	31-Mar-31	Audit Report	To be conducted between April and May of each year	
		b) Internal Audits (Concurrent Audits)	PMU	Contractor/ PMU	01-Jun-23	31-Dec-30	Concurrent audit reports	To be undertaken in every quarter	
		c) Social Audits	PMU	JFMC/ FMU/ DMU	01-Jan-25	28-Feb-31	Social Audit Reports	To be undertaken at the end of each FY	
		4.4 Strengthening Forest Research	PMU	PMU/ DMU	01-Apr-24	31-Mar-30	Research Reports		
		4.5 Publicity and Publication							
		4.5.1 Website maintenance	PMU	PMU	01-Jul-23	31-Mar-29	Websites	Vender to be procured during the 1st Q of FY 2023	
		4.5.2 Guidelines, manuals and annual reports	PMU	PMU	01-Sep-23	31-Mar-31	Materials developed	Vender procurement shall begin 6 months before	

								the requirement.	
		4.5.3 Small films, videos. Digital documentation	PMU	PMU	01-Sep-24	31-Dec-30	Materials developed	Vender procurement shall begin 6 months before the requirement.	
		4.5.4 Knowledge material/ course material	PMU	PMU	01-Jan-24	30-Jun-27	Materials developed	Vender procurement shall begin 6 months before the requirement.	
		4.5.5 “Proof of Concept” (PoC) activities for several digital technology/ innovation	PMU	GIS Cell/PMU/PM C	01-Apr-23	01-Sep-25		The mentioned schedule is tentative.	

Attachment 26: Assessment of Eligibility						
Sl No	Proposed Interventions	Quantity	Estimated Cost (exclude GST) (Mill. INR)	Utility for the Project	Post-project Operation & Maintenance	Assessment
1	PMU Office Building	1 unit (28,000 SQF) Ground floor + 7 levels	130.2 million INR	The building will come-up in Salt Lake area of Kolkata, and the land is already owned by the Wbfd. The floor area of the building will be 4,000 SQF, and will have ground floor and 7 stories. This space will be utilised by the PMU to house the officers and staff deployed for project implementation as per the institutional arrangements, and to conduct review meetings, training sessions for the field officers/ staff, M&E/ GIS facilities, and other activities that are necessary for project implementation .	Post-project maintenance will be carried out by the West Bengal Forest Department from its normal budgetary outlay.	1. Exclusiveness to the Project: In the phase 1, building support was extended at the state level, by providing funds to add two floors to the existing headquarter building. It was envisaged that PMU could be located in the additional structure, but due to the government decision to relocate the minister in-charge, along with the forest secretariate from the existing old government building to the forest headquarter, the space available could be utilised only for establishing GIS facility for the project purpose. Now, the PMU building will come-up in separate land that is available with Wbfd, and will exclusively be

						<p>utilised by the PMU for implementation of the Project activities.</p>
						<p>2. Essential to project effect and sustainability: From the time of JICA assisted project (ID P223), PMU has been operating from a rented premise. Thus, PMU building will strengthen the project implementation as well as will also contribute to the overall infrastructure strengthening of the WBFD. The existing working space is insufficient for accommodating project staff for project administration and management in the new phase of the Project. The Project will require dedicated work space and attention of all the functionaries at the state level. After the project closure the building will be owned by the WBFD, and will utilize the</p>

						space for strengthening forestry operations, and will be maintained by WBFD from its own budgetary resources.
						3. Valid in Quantity: At the state level one PMU Office need to be established as per the institutional arrangements, and thus proposed infrastructure is required.
2	CCF Office Building	1 unit (5,000 SQF)	15 million INR	The building will come-up in Durgapur, and the land is already owned by the WBFD. The floor area of the building will be 5,000 SQF, and will have ground floor only. This space will be utilised by the CCF at Circle level to support PMU for supervision and extending guidance on the project implementation at the field level. This office will also conduct regular review meetings, and annually organize workshops and other project events.	Post-project maintenance will be carried out by the West Bengal Forest Department from its normal budgetary outlay.	1. Exclusiveness to the Project: Earlier, the CCF Offices were being operative from the WBFD headquarters at Kolkata, but now, these offices are being established at the field level. Other Circle level offices are already established and functional. The CCF Office building will come-up on land available with WBFD, and will exclusively be utilized by the CCF for forestry operations as well as to support PMU for

						<p>implementation of the Project activities.</p>
						<p>2. Essential to project effect and sustainability: As per the forest administration structure, Circle Offices that is headed by CCF rank officer is an important link between the headquarter and the field offices. The project institutional arrangements also utilizes this exiting structure, and CCF Office will play an important role to support the PMU for project implementation as well as undertaking the performance reviews as well as to supply progress information on regular basis. Thus, this office will be supportive to strengthening both the project as well as overall forestry operations, and will also contribute to the overall infrastructure strengthening of the Wbfd.</p>

						<p>After the project closure the building will be owned by the Wbfd, and will utilise the space for strengthening forestry operations, and will be maintained by Wbfd from its own budgetary resources.</p> <p>3. Valid in Quantity: At the regional level one CCF Office need to be established as per the institutional arrangements, and thus proposed infrastructure is required. Other Circle Offices that will also be involved in the project activities are already established and functional.</p>
3	Range Office Complex Building	25 unit (1200 SQF each unit)	60 (2.4 million INR each unit)	<p>The new Project will be implemented in 90 Forest Ranges (indicative) in the State. During the earlier JICA assisted projects ID P223, only five Range Offices Complex were supported, but there is long pending requirement with the</p>	<p>Post-project maintenance will be carried out by the West Bengal Forest Department from its normal budgetary outlay.</p>	<p>1. Exclusiveness to the Project: The Range Offices will directly participate in the project implementation, and the buildings will provide the field officers and staff dedicated space to work on the project as well as perform regular departmental functions. Thus,</p>

				<p>WBFD to strengthen the key link for field operations, and have not been able to mobilize sufficient funds to address all. Thus, under the project 25 such complex building is being supported to strengthen the field and project operations. This Ranges will be the hub of activities in the new Project. This space will be utilised by the Range Officers to assist/ support PMU for implementation of planned activities, as well as to extend guidance to the project staff at the field level. This office will also conduct regular review meetings, and other project events.</p>	<p>these buildings will be exclusively be utilised for the project operations.</p> <p>2. Essential to project effect and sustainability: The Range Offices (RO) are very important level, and their nature of job is round the clock that includes addressing to unforeseen incidences like forest fire control, animal attacks mitigation, monitoring development, protection and detection of forest offence and encroachment and taking prompt action and movement, etc. The launch of the new Project is likely to account for their 80% of workloads while their remaining time will be spent on doing regular departmental functions. The existing living space is not conducive for them to rest and regain strength to respond to their demanding workload.</p>
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						<p>Hence creation of the RO Complexes is an essential requirement for the project. After the project closure the building will be owned by the Wbfd, and will utilise the space for strengthening forestry operations, and will be maintained by Wbfd from its own budgetary resources.</p> <p>3. Valid in Quantity: At the range level these RO Complex buildings need to be established. These will be called FMUs as per the institutional arrangements, and thus proposed infrastructure is required for smooth implementation for the Project. This work shall be undertaken in the selected ranges as some of the ranges where necessary.</p>
4	Mobility - Cars	30 nos.	45 (1.5 million INR each unit)	For quick mobilisation of staff, time-bound implementation and monitoring in the project	Normally, the value of a car/ vehicle depreciates around 15%-18% in a given year.	1. Exclusiveness to the Project: Mobility support that will be extended under the

				mode, prompt intervention and speedy movement is essential. Input of Beat officers/ Range Offices are also regularly required for the JFMC areas. As the availability of public transport is not assured, dedicated vehicles are required for the field staff. For the wildlife wing of the WBFD, there is requirement for mitigating human population as well as attend to injured wild animals. Thus, transport facility is necessary to efficiently and safely transport such injured wild animals to veterinary hospitals/ rescue centres. In Sundarbans areas there requirement of undertaking surveillance activities in and around the tiger reserve as well as keep eye for any illegal activities along the international	And, thus the life of a vehicle is less than 10 years. So after the Project is over, the vehicles will not be able to run on full efficiency, and use may become very limited. Post-project maintenance will be carried out by the West Bengal Forest Department from its normal budgetary outlay.	project will be utilised at various levels and for the purpose as envisaged. These support will be utilised on priority to attend the project requirements.
	Mobility - Motorcycles	85 nos.	8.5 (0.1 million INR each unit)			2. Essential to project effect and sustainability: The mobility support will definitely enhance the efficiency of the project implementation, and will be critical for addressing the human wildlife conflict as well as to enhance surveillance and monitoring of the project. After the project closure the vehicles and UAV will be owned by the WBFD, and will utilise the space for strengthening forestry operations, and will be maintained by WBFD from its own budgetary resources.
	Mobility - Truck (LPT407) - Airavat	4 nos.	6 (1.5 million INR each unit)			

	Mobility - Speed Boats	7 nos.	14 (2 million INR each unit)	boundaries. The operator with the UAV will support the plantation monitoring, and action like fire surveillance etc. Thus, the mobility support will be essentially required to support the project implementation . The Cars will be utilised at the DMUs/ PMU, while the Motorcycles will be utilised by Beat Staff to facilitate field operations. The Trucks will be procured and modified for transportation of wild animals, whereas the Speed Boats will be deployed in Sundarbans area. The UAV will be utilised by the Research and Monitoring Wing of the WBFD.		3. Valid in Quantity: The quantities are judiciously been allocated as per requirements and after identification of gaps in view of the project requirements.
	UAV	1 nos.	4.7 million INR			

Gender Action Plan

1. Gender Mainstreaming Strategy

Category	Interventions	Main Objectives	Indicators/Outcomes
1. Institutional Arrangement & Infrastructure Development	1.1 To engage female officers/ staffs up to 30% of the total number of each project management unit level including subcontractors 1.2 To include appropriate number of sanitary facility for both genders	<ul style="list-style-type: none"> To create an enabling environment for inclusive project implementation process To deliver project support to women beneficiaries 	<ul style="list-style-type: none"> The number and % of female officers/ staff engaged by the project No of buildings/ structures having proper sanitary facility for both genders
2. Gender Situational Analysis	2.1 To conduct gender analysis in the project area	<ul style="list-style-type: none"> To identify gender related issues to be taken into consideration in the project implementation process 	<ul style="list-style-type: none"> Gender analysis report Revised Gender action plan
3. Gender Mainstreaming Training	3.1 To develop gender mainstreaming guideline 3.2 To development of gender training programme 3.3 To conduct gender training at all levels of project management unit and community	<ul style="list-style-type: none"> To capacitate the project officers/ staffs to mainstream gender in the project To create community awareness on gender 	<ul style="list-style-type: none"> Gender mainstreaming guideline (Appendix 1) Gender mainstreaming training programme (Appendix 2) No of participants (segregated by level of project management/ implementation unit and gender)
4. Gender Monitoring System	4.1 To monitor the implementation of gender mainstreaming strategy and gender action plan	<ul style="list-style-type: none"> To ensure the adequate measures are incorporated for gender equity in the project implementation process 	<ul style="list-style-type: none"> Appointment letter of officer in charge of gender Gender budget Gender monitoring report

2. Gender Action Plan

Activity	Objectives	Monitoring Indicators of Consideration Measures/ Targets/ Measures for Consideration	Monitoring Method
Planning Stage			

Activity	Objectives	Monitoring Indicators of Consideration Measures/ Targets/ Measures for Consideration	Monitoring Method
Consultation for site selection and identification of the target JFMCs	<ul style="list-style-type: none"> - To incorporate women's perspectives to decide whether to participate in the project 	<ul style="list-style-type: none"> - Thirty percent of the participants in the consultation are women. - If the women are having difficulty in participating in the consultation meetings due to societal norms and other reasons, separate consultation for the women group is to be held at their convenient time and venue where they feel secure. - In the selection of the target JFMCs, JFMCs with the following characteristics are prioritised: <ul style="list-style-type: none"> i) higher ratio of motivated or <i>de-facto</i> women headed households in their members and committee members; and ii) higher ratio of women-headed households. 	<ul style="list-style-type: none"> - FMUs prepare the lists of participants of the consultation, and report through the project MIS. - FMUs evaluate the criteria during the JFMC selection.
Formulation/activation of JFMCs	<ul style="list-style-type: none"> - To make management of JFMCs more gender responsive 	<p><Executive committee></p> <ul style="list-style-type: none"> - At least 30% of the executive committee of the new JFMCs to be formulated in the Project is women. - At least 30% of the executive committee of JFMCs newly elected for activation in the Project is women. - Participation of women in the executive committee meeting shall be more than 50% of women executive members. (As per JFM Resolution 2017, 30% of the executive committee of JFMC is women, while the actual ratio is less than 30%.) <p><Member></p> <ul style="list-style-type: none"> - Women's participation is more than 50% of the general body meetings. <p><Governance></p> <ul style="list-style-type: none"> - Information sharing mechanism among the JFMC members, especially for those who does not attend the meeting, is established in each JFMC. (Women members sometimes have difficulty in attending meetings due to their household work, weather conditions etc.) 	<ul style="list-style-type: none"> - FMUs enters the data of the registered members in WBFD MIS, and report the ratio of women in the project MIS.
Development of micro plan of JFMCs (including planning of EPA/CDA)	<ul style="list-style-type: none"> - To incorporate women's requirements to be addressed in project activity 	<ul style="list-style-type: none"> - Focus group discussion is conducted as per the guidelines for micro-plan preparation with at least 30% of participants women. - If mixed gender group does not facilitate discussion, gender segregated group discussion shall be conducted and their views shall be shared in plenary by the women facilitator leaders. They shall also be informed of how the needs/opinions confirmed in the group 	<ul style="list-style-type: none"> - FMUs prepare the lists of participants of micro plan development consultations and report through the project MIS. - DMU will monitor the implementation process and report observation to PMU.

Activity	Objectives	Monitoring Indicators of Consideration Measures/ Targets/ Measures for Consideration	Monitoring Method
		discussion are incorporated in the micro-plan, and shall be given the opportunity to give their feedback for the finalisation of the micro-plan.	
Selection of NTFP species for plantation		- At least 30% of the NTFP species to be planted is the ones which women are commonly harvesting and selling to the market.	- FMUs report consultation results to DMUs, and DMUs reports the selected NTFPs with selected reasons to PMU.
Implementation Stage			
Field work for forest development (nursery maintenance, afforestation, ANR), participatory biodiversity conservation, community infrastructure development etc.	- To make gender friendly workplace and work condition	- Equal pay for equal work - In order to provide the equal work opportunity for women, work environment/ conditions are created by various means. For example, gender-wise washroom is established near the work sites including project units (PMU/ DMU/ FMU). Mobility from the community to the work site is to be provided for women; Short-time part work opportunity for those who have limited time for working is offered, etc. As a result, at least 30% of the labourers engaged by the project shall be women.	- FMUs reports the gender-wise benefit sharing and payment to JFMC members through the project MIS.
Trainings of JFMCs, SHGs	- To facilitate women's economic empowerment	- Training venues and duration shall be determined depending on the gender-based preference. When organising women's training, the duration shall be short and the venue shall be close to their residence. In case the training is organised outside of the village, their spouses also need to be informed and consulted for their participation. - Training duration and timing are proposed considering gender-wise timetable. Gender-wise washroom is prepared in the training facility/sites. Mobility of training participation is provided for women groups if required. By means of such measures, more than 50 % of women JFMC members, attend the trainings on the activities which they participate. - Gender Mainstreaming Training for all JFMCs.	- FMUs prepare the lists of participants of in the trainings and report through the project MIS.
Project management	- To provide gender responsive support at the community level	- Up to 30% of the extension workers and personnel of the Technical Agencies engaged by the project are women. - Fifty percent of project officials/staff at PMU/ DMU/FMU shall be women.	- PMU supervises implementation of ESAF following the monitoring plan described in ESAF, and report to JICA.

Activity	Objectives	Monitoring Indicators of Consideration Measures/ Targets/ Measures for Consideration	Monitoring Method
		<ul style="list-style-type: none"> - All the PMU, DMU, and FMU members responsible for ESAF/project monitoring are assigned and required to attend the trainings provided by PMC on ESAF including consideration for gender. - To enhance the utilisation of grievance redressal mechanism by the women, at least three female members of FMUs/DMUs take part in the grievance committee from female stakeholders. 	

Source: JICA Survey Team

3. Implementation Schedule of Gender Mainstreaming Strategy

The gender mainstreaming strategy shall be implemented by PMU. The nodal officer shall be appointed during the initial stage of the project and shall be responsible for overall gender mainstreaming and gender monitoring. Technical guidance may be sought from PMC. The gender action plan will be implemented as per the overall project implementation schedule and monitoring will be undertaken periodically based on the monitoring data derived from the project MIS.

Category	Interventions	By whom	Period
1. Institutional Arrangement & Infrastructure Development	1.1 To engage female officers/ staffs up to 30% of the total number of each project management unit level including subcontractors 1.2 To include appropriate number of sanitary facility for both genders	1.1 PMU 1.2 PMU/ Contractor	1.1 FY 2023-24 1.2 FY 2023-24
2. Gender Situational Analysis	2.1 To conduct gender analysis in the project area	2.1 PMU/ PMC	2.1 PMU/ PMC
3. Gender Mainstreaming Training	3.1 To develop gender mainstreaming guideline 3.2 To development gender mainstreaming training programme 3.3 To conduct gender training at all levels of project management unit and community	3.1 PMU/ PMC 3.2 PMU/ PMC 3.3 PMU/ PMC	3.1 PMU/ PMC 3.2 PMU/ PMC 3.3 PMU/ PMC
4. Gender Monitoring System	4.1 To appoint nodal officer on gender 4.2 To undertake periodic gender monitoring using data derived from Project MIS	4.1 PMU/ PMC 4.2 PMU/ PMC	4.1 PMU/ PMC 4.2 PMU/ PMC

Appendix-1: Indicative Outline of the Gender Mainstreaming Guideline

Gender mainstreaming guideline is intended for the uses as a training material for the gender mainstreaming training and also day-to-day guide during the field implementation. This document shall be developed by PMU/ PMC based on the gender analysis and prior to the implementation of the training activities. . Indicative Table of Contents is given below.

1. Introduction: What is Gender Mainstreaming? Why does it matter?
 2. Understanding Different Perspectives
 3. Tools for Discovering Gender Perspectives: Gender Analysis
 4. Ways to Make the Project Gender Responsive
 - 4.1 Defining Roles and Responsibilities of the Actors in Project Implementation
 - 4.2 Gender Mainstreaming Strategy of the Project
 - 4.3 Gender Action Plan of the Project
 - 4.4 Gender Budgeting
 5. Gender Monitoring System of the Project
 - 5.1 Gender Monitoring Indicators
 - 5.2 Monitoring System
 - 5.3 Reporting
 6. Gender Mainstreaming Training
- Attachment: Templates that can be used for planning and monitoring can be attached.

Appendix-2: Indicative Outline of Gender Mainstreaming Training

1. PMU/ DMU/ FMU (1Day)

The training will be carried out by the resource person from the resource organisation or by PMC.

➤ Training Objectives:

- To understand the necessity of gender mainstreaming
- To acquire the gender responsive planning/ budgeting skills
- To understand the overall approach to gender mainstreaming

Indicative Gender Mainstreaming Training Outline for PMU/ DMU/ FMU

Time	Programme	Group Exercises
AM	1) Understanding gender and gender mainstreaming 2) Gender dimensions of climate change vulnerability 3) The objectives of gender mainstreaming 4) Gender Roles in the project implementation	i. Group Discussion ii. Gender Analysis
PM	5) Gender mainstreaming strategy of the project and gender action plan 6) Effective institutional and monitoring arrangement 7) Gender budgeting 8) Gender monitoring system of the project	iii. Group Work & Plenary <ul style="list-style-type: none"> • Gender action planning exercise • Gender budgeting exercise • Setting gender monitoring indicators

2. JFMCs (1 Day)

The programme shall be conducted by Extension Workers. Extension Workers shall be trained by PMU/ PMC during the induction training. All the executive members of JFMCs shall be trained.

➤ Training Objectives:

- To understand the differences in perspectives between men and women
- To understand the ways to respect the needs of men and women in the locality through gender responsive planning/ budgeting methods

Indicative Gender Mainstreaming Training Outline for JFMC Executive Members

Time	Programme	Group Exercises
AM	1) Understanding different perspectives of men and women 2) Importance of gender mainstreaming 3) Gender roles in project activities	i. Analysis of gender roles in community, household, forest related activities and etc. ii. Gender analysis on access and control of forest and non-forest resources
PM	4) Gender Responsive Micro Planning	iii. Microplanning exercise

3. SHGs

The programme shall be conducted by Extension Workers. Extension Workers shall be trained by PMU/ PMC during the induction training. Depending on the availability of time among the SHG members,

the activities can be scheduled. In the thematic discussions, local resource persons including ASHA, Anganwadi workers, and other relevant government staffs may be invited.

- The training objective:
 - To create an awareness of value of women’s contribution to the community and family
 - To get exposed to the analytical thinking to resolve the problems faced by women in the community
 - To acquire skills to plan for action

Indicative Gender Mainstreaming Training Outline for SHG Members

Time	Programme	Group Exercises
General	1) Understanding Different Perspectives 2) Issues that faced by men and women in the community and how to resolve 3) Catering for Women’s Needs	i. Gender Roles in Community, Household, Project Activities ii. Gender Analysis on Access and Control of Forest and non-Forest Resources iii. Problem Tree Analysis iv. Venn Digrammes v. Action Planning
Thematic Discussions	Depending on the issues to be resolved in the community thematic training programmes can be organize by the Extension Workers. Some of the suggested topics are given below: managing household economy; disaster response; literacy; legal literacy; business management; and etc.	

4. Extension Workers

This training shall be conducted by PMU/ PMC as part of the induction training for the extension workers.

- Training objectives:
 - To understand the concept of Gender
 - To understand the different perspectives in community, household and joint forest management
 - To understand how to devise gender analysis tools and facilitate the group discussions
 - To gain skills to carry out the gender responsive micro planning/ annual planning budgeting process with VSS/ EDCs

Indicative Gender Mainstreaming Training Outline for Extension Workers

Time	Programme	Group Exercises
AM	1) Understanding different perspectives – Men and Women 2) Importance of gender mainstreaming 3) Gender roles in project activities 4) Gender responsive microplanning	i. Gender Roles in Community, Household, Forest Management ii. Gender Analysis iii. Microplanning exercise
PM	4) Gender responsive facilitation skills	iv. Principles in Facilitation v. Role Play vi. Problem Tree Analysis vii. Venn Digrammes

	<p>5) Issues that faced by men and women in the community and how to resolve</p> <p>6) Catering for women's needs</p>	<p>iii. Action Planning</p> <p>ix. Existing resources that can help women - Information on the government schemes/ programmes and how to access. Thematic areas may include managing household economy; disaster response; literacy; legal literacy; business management; and etc.</p>
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Attachment 31: Logo for the Project

Logo for the Project

**THE PROJECT FOR FOREST AND BIODIVERSITY CONSERVATION
FOR CLIMATE CHANGE RESPONSE IN WEST BENGAL**

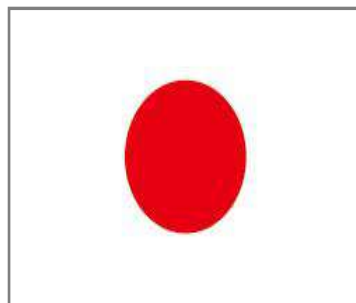
FUNDED BY JAPANESE ODA LOAN

AS A TOKEN OF FRIENDSHIP AND COOPERATION

BETWEEN

JAPAN AND INDIA

【Completion Year: 2031】

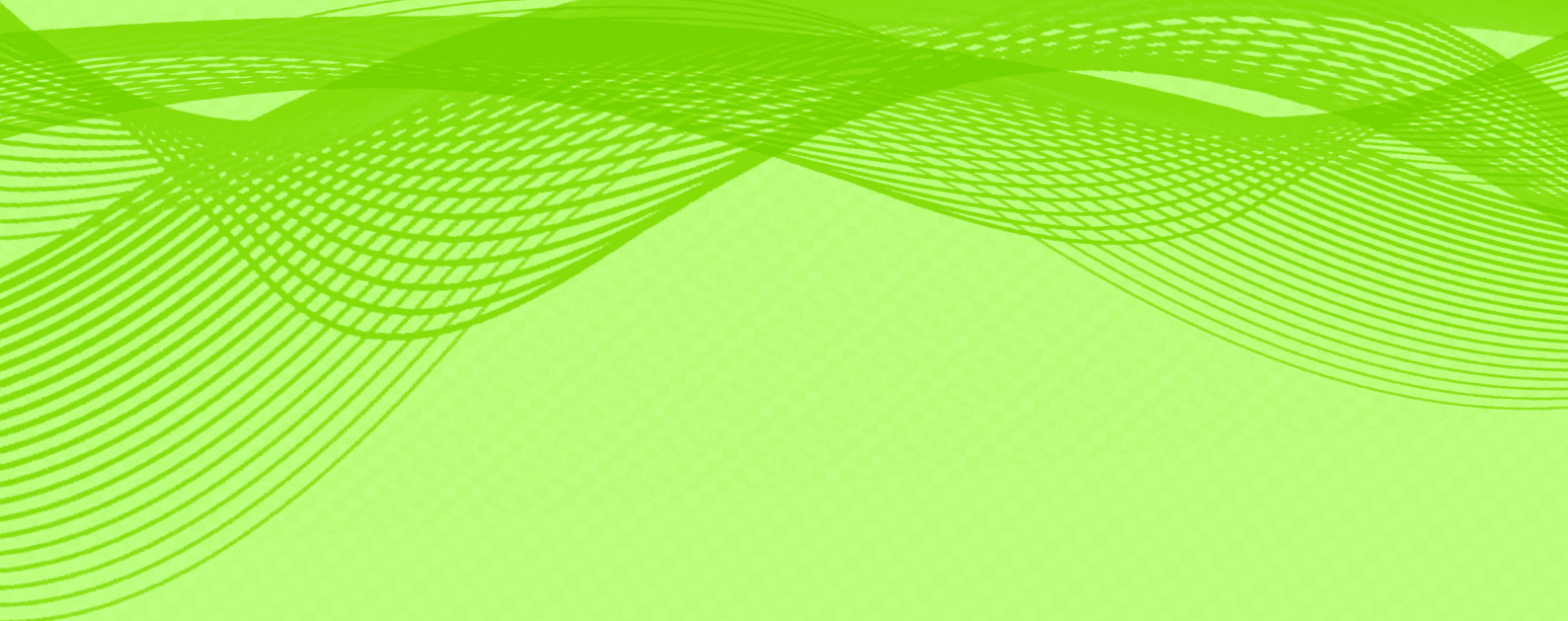


**From
the People of Japan**



Government of India





PROJECT MANAGEMENT UNIT
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