

INDEPENDENT OF STATE PAPUA NEW GUINEA
PAPUA NEW GUINEA FOREST AUTHORITY

Project Completion Report
on
Capacity development project for
reducing carbon emissions from
forest degradation through
commercial logging in PNG by
improving monitoring system of
forest logging operations

March 2025

JAPAN INTERNATIONAL COOPERATION
AGENCY (JICA)

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Project Completion Report

**Capacity development project for reducing
carbon emissions from forest degradation
through commercial logging in PNG by
improving monitoring system of forest
logging operations
(April 2022 – April 2025)**

Submission Date: March 2025

Japan International Cooperation Agency (JICA)

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ANNEXES:

ANNEX 1: Results of the Project

(List of Dispatched Experts, List of Counterparts, List of Trainings, etc.)

ANNEX 2: List of Products (Report, Manuals, Handbooks, etc.)

ANNEX 3: PDM (All versions of PDM)

Location of Project Area

Territory of Papua New Guinea

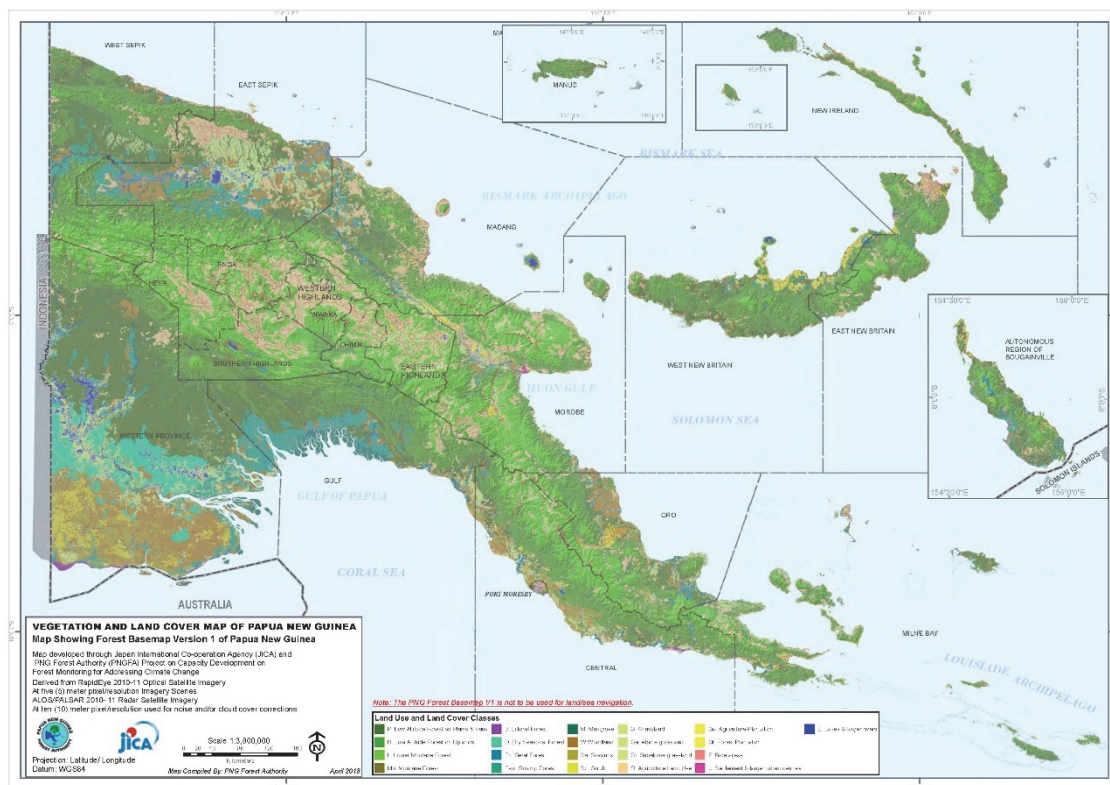


Independent State of Papua New Guinea

Area: 462,840 km²

Population: 8,850,000 (2020, World Bank)

GNI per capita: 2,660 USD (2020, World Bank)



Abbreviations

AFOLU	Agriculture, Forestry and Other Land Use
AusAID	Australian Agency for International Development
BUR	Biennial Update Report
C/P	Counterpart
CCDA	Climate Change and Development Authority
CEPA	Conservation & Environment Protection Authority
COP	Conference of the Parties
DSS	Decision Support System
EF	Expertise France
EU	European Union
EU-FCCB	
FAO	Food and Agriculture Organization of the United Nations
FCA	Forest Clearing Authority
FCPF	Forest Carbon Partnership Facility
FMA	Forest Management Agreement
FREL	Forest Reference Emission Levels
GCF	Green Climate Fund
JICA	Japan International Cooperation Agency
LCoP	Logging Code of Practice
LFA	Local Forest Area
NDC	Nationally Determined Contribution
NFI	National Forest Inventory
NFMS	National Forest Monitoring Systems
NRS	National REDD+ Strategy
OBT	Open Bay Timber Ltd.
PDM	Project Design Matrix
PMCP	Planning, Monitoring and Control Procedures for Natural Forest Logging Operations under Timber Permit
PNG	Papua New Guinea
PNG-FRIMS	PNG Forest Resource Information Management System
PNGFA	PNG Forest Authority
PO	Plan of Operations
R/D	Record of Discussions
RBP	Results-based Payment
REDD+	Reducing Emissions from Deforestation and forest Degradation, plus the sustainable management of forests, and the conservation and enhancement of forest carbon stocks
RIL	Reduced Impact Logging
TA	Timber Authorities
TLS	Timber Legality Standard
TLVS	Timber Legality Verification System

TRP	Timber Rights Purchase
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VCS	Verified Carbon Standard

I. Basic Information of the Project

1. Country: The Independent State of Papua New Guinea

2. Title of the Project:

- Capacity Development Project for Reducing Carbon Emissions from Forest Degradation through Commercial Logging in PNG by Improving the Monitoring System of Forest Logging Operations (PNGFA-JICA Forest Project)

3. Duration of the Project :14th April 2022 – 13th April 2025 (3 years)

4. Background

The Independent State of Papua New Guinea (hereinafter referred to as “PNG”) is one of the world’s largest tropical forest nations, and its forests play a crucial role in both environmental sustainability and economic development. To support this, the PNG constitution stipulates the sustainable conservation and utilization of natural resources, which is reinforced by the National Forest Policy, the Forestry Act, and related legislation. Forests are essential not only for environmental sustainability but also for economic development, as they create jobs and generate income for local communities.

In 2015, greenhouse gas emissions increased by approximately 29 million tons of CO₂ compared to 2000. This increase was largely driven by commercial logging and agricultural land use, which accounted for approximately 80% (roughly 23 million tons) of the total. Therefore, tackling deforestation and forest degradation is expected to be a key strategy for mitigating climate change and promoting sustainable forest management.

To address these challenges, PNG has prioritized REDD+ (Reducing Emissions from Deforestation and Forest Degradation) as a key policy initiative. The country works closely with development partners such as the Food and Agriculture Organization (FAO), the United Nations Development Programme (UNDP), and the Japan International Cooperation Agency (JICA) to advance REDD+ initiatives and promote sustainable forest management practices.

As part of its support for climate change mitigation efforts, JICA has been engaged in various forestry cooperation efforts since 2010, including a grant aid program and two technical cooperation projects aimed at developing Forest Base Maps, developing and utilizing the PNG Forest Resource Information Management System (PNG-FRIMS) to enhance forest management, improving forest monitoring, and strengthening REDD+ data and information.

Given this situation, to address climate change issues, particularly forest degradation from commercial logging - the largest contributor to PNG’s greenhouse gas emissions - JICA has launched a new technical cooperation project in 2022, the "Capacity Development

Project for Reducing Carbon Emissions from Forest Degradation through Commercial Logging in PNG by Improving the Monitoring System of Forest Logging Operations" (hereinafter referred to as the "Project").

The Project aims to strengthen the capacity of stakeholders for improving logging monitoring and operations, thereby reducing greenhouse gas emissions from logging activities in PNG.

The project has the following three outputs;

- (1) Capacity building for stakeholders to comply with regulations related to logging activities,
- (2) Promoting assisted natural regeneration following selective logging, and
- (3) Developing a method to promote low-emission logging.

5. Overall Goal and Project Purpose

- **Overall goal:** Forests in PNG are conserved, managed in a sustainable manner and, at the same time, its conservation is promoted as an important measure against climate change.
- **Project Purpose:** The capacity of stakeholders for enforcement of rules and procedures on logging operations and natural regeneration activities are strengthened for reducing forest degradation and promoting low emission logging.

6. Implementing Agency

- Papua New Guinea Forest Authority (PNGFA)

II. Result of the Project

1. Results of the Project

1-1. Input by the Japanese side (Plan and Actual)

The inputs were mostly sufficient based on the Record of Discussions (R/D) as outlined below. The input by the Japanese side is listed in 1-1 of the Annex1.

(1-1-1) Budget:

Plan: 335 million Japanese Yen

Actual: 363 million Japanese Yen

(1-1-2) Dispatch of Experts

Plan: Chief advisor/Forest policies, Coordinator, Forest Management, Forest carbon monitoring, Forest restoration, Forest information/Measurement, Training/Exit strategies, Other experts necessary for the implementation of the Project

Actual: Actual input of JICA experts is described as follows.

(Long-term expert): Three long-term experts were dispatched as following.

- Chief Adviser / Forest Policy: Mr. Masato Okabayashi (14th April 2022-13th April 2025).
- Coordinator: Mr. Yusuke Nishiyama (1st June 2022 - 31st May 2024).
- Coordinator / Forest Management: Mr. Ippei Tomo (6th April 2024- 13th April 2025)

(Short-term expert)

- Team Leader / Forest Management 1: Mr. Takahiro Koide (6.82 MM)
- Deputy Team Leader / Forest Management 2: Ms. Ayako Ochi (3.23 MM)
- Carbon Monitoring 1: Mr. Masamichi Haraguchi (1.70 MM)
- Forest Restoration / Forest Carbon Monitoring 2 / Measurement 1: Mr. Hirokazu Takahashi (6.93 MM)
- Forest Information/Measurement 2: Mr. Masayoshi Minegishi (8.22 MM)
- Training / Exit Strategy: Mr. Stephan Salim (2.07 MM)
- Training / Exit Strategy: Mr. Takaaki Kato (1.23 MM)

(1-1-3) Machinery and Equipment

Plan: Vehicle(s), Equipment for training and survey, Other equipment necessary for the implementation of the Project

Actual: The procured machinery and equipment are as follows.

- One vehicle (Nissan Patrol), two laptop computers, three printers were procured from March to May 2022.
- One workstation for PNGFRIMS, one drone (DJI Mavic 3 Enterprise), GNSS Mobile Station was procured from March to April 2023.
- Two workstations for drone image analysis, three laptop computers were procured from October 2023 to Mar 2024.

- Two workstations for drone image analysis, two drones (DJI Mavic 3 Enterprise) were procured from September 2024 to October 2024.

(1-1-4) Counterpart Training

Plan: The Knowledge Co-Creation Program (KCCP) for Group and Region Focus (Proceeding Ability of Policy Making for Sustainable Forest), The Project Training in Japan (Sustainable Forest Management), Other training necessary for the implementation of the Project

Actual: Counterpart Training in Japan for this project was conducted from 24 May to 7 June 2023. Five officials from PNGFA attended this training.

(1-1-5) Overseas Activities Cost

Overseas activities cost for implementation for the project activities such as PMCP/LCoP training, pilot activities on natural regeneration, field carbon monitoring was allocated for the expenses including training costs, travel costs, security costs, and national staff salaries.

1-2 Input by the PNG side (Planned and Actual)

The inputs of PNG side were mostly sufficient based on the R/D as outlined below. The input by the PNG side is listed in 1-2 of the Annex1.

(1-2-1) Counterpart Personnel

Plan: Project Director, Deputy Project Director, Project Manager, Deputy Project Manager, PNGFA technical staff, Other supporting staff

Actual: The following four (4) officials were nominated as project counterparts and significantly contributed to achieving project outcomes.

- Project Director: Mr. Dambis Kaip, Director, Forest Policy and Planning Directorate
- Deputy Project Director: Mr. Alois Jenkihau, Manager of Policy & Aid Coordination Branch, Forest Policy and Planning Directorate
- Project Manager: Mr. John Orabi, Deputy Director (New Guinea Island), Field Operation Directorate
- Deputy Project Manager: Mr. Gewa Gamoga, (Director, Reforestation and Afforestation Directorate)
- Various Technical Staff: In addition to the four officers above, almost thirty PNGFA officers in HQ (Forest Policy and Planning Directorate, Field Operation Directorate, Human Resource & Administration Directorate, Reforestation and Afforestation Directorate, Forest Acquisition and Allocation Directorate), several officers of Forest Research Institute and more than fifteen officers of Provincial Forest Offices were involved in the project activities through attending meetings/discussions, organizing trainings, and conducting field activities including assisted natural regeneration with stakeholders.

(1-2-2) Office space with necessary equipment

Plan: Suitable office space with necessary equipment

Actual: Two renovated individual office rooms were prepared with necessary equipment (Desk, 3 chairs, rocker, individual air conditioner) in 2022 for the two long-term experts. In addition, office space with equipment for short-term experts, national staff and a driver has been provided.

(1-2-3) Supply or replacement of machinery, etc.

Plan: Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other necessary materials

Actual: No supply or replacement was necessary during project implementation.

(1-2-4) Admission card for the PNGFA building

Plan: Admission card for the PNGFA building

Actual: Two sets of keys to enter PNGFA building and individual spaces were prepared for two JICA long-term experts. Additionally, three parking space for a project vehicle and JICA long-term expert's vehicles were provided.

(1-2-5) Available data

Plan: Available data (including maps and photographs) and information related to the Project

Actual: Necessary data and information were provided from FRIMS and other sources.

(1-2-6) Running expenses necessary for the project

Plan: Running expenses necessary for the Project transportation within PNG of the equipment as well as for the installation, operation and maintenance

Actual: Running expenses for counterpart's travel, JCC meetings, utilities, and so on were paid. Expenses for co-funding program on 3 regional workshops of PMCP & LCoP to PNGFA officers were secured as shown in the table 4-2.

1-3 Activities (Plan and Actual)

1-3-1. Output 1: Application of PMCP and LCoP to stakeholders (Planned and Actual)

Plan: The Planning, Monitoring and Control Procedure (PMCP) and the Logging Code of Practice (LCoP) are well understood and applied by project stakeholders (Government, Forest industry, etc).

Actual (Summary):

The project identified key stakeholders to disseminate PMCP and LCoP as PNGFA officers and employees of logging companies. The project implemented the training workshops with developed training materials as follows:

- **Three regional training workshops on the PMCP and revised LCoP for PNGFA field officers**, from September 2023 to March 2024, aimed at capacity building of monitoring capabilities of PNGFA officers (Activity 1-5).
- **Three training workshops on the PMCP and the revised LCoP for the forest industry**, from September 2024 to November 2024, aimed at promoting application of the PMCP and the LCoP at logging operation (Activity 1-6).

- **Monitoring tools and dissemination materials were developed** through trial activities in pilot sites and training implementation (Activity 1-4, Activity 1-7)

Planned 7 activities (Activity 1-1 to Activity 1-7) and actual results for Output1

To achieve the output 1, the following seven activities (Activity 1-1 to Activity 1-7) were planned, and the details of each plan and actual result is as follows.

Activity 1-1. Challenges are identified through reviewing actual use of PMCP and LCoP, as well as information flow of logging activities.

Challenges related to the implementation of logging operations were analyzed, and a report was prepared in August 2022.

Activity 1-2. Based on the review of the information organized in activity 1-1, examine and identify ways to strengthen PNG-FRIMS and utilize new technologies related to GIS and remote sensing to effectively promote sustainable forest management complying with PMCP and LCoP.

At 3rd JCC meeting in March 2023, a short-term expert proposed the use of mobile devices and drones to enhance the field logging monitoring conducted by PNGFA.

At the same JCC, the Project Manager proposed to make a model set-up plan using equipment such as drones, GPS, GIS in collaboration with Open Bay Timbers Ltd (OBT).

The direction of this activities was agreed and approved. The detail is described in the 2nd Monitoring Sheet. And the outline of developed monitoring tools is described in the table 1. The trials of the monitoring tools are conducted in the Activity 1-4.

Table1. Developed monitoring tools (Proposed at 3rd JCC meeting in Mar 2023)

Monitoring tools	Explanation monitoring tools
1. Mobile Offline Map (Qfield)	Field monitoring tool using free app. "Qfield".
2. PMCP Check List	Reporting tool of monitoring result (field monitoring sheets) using free app. "Kobo".
3. Drone	Drone utilization for logging monitoring including image capture and its processing
4. LAN Map	New intranet GIS system to renovate old LAN Map
5. Deforestation alert system	A part of National Forest Monitoring System in REDD + portal site.
6. Data map submission	Qfield and GIS dissemination to companies for data map submission to PNGFA from companies
7. Model Set-up Plan (Open Bay)	Use advanced technologies such as GIS and drone to make a set-up plan

Item 5 & 6 above were added after the 3rd JCC meeting with consultation among project members.

Activity 1-3 Set criteria for selecting pilot site(s) to undertake trials of the effective forest management complying with PMCP and LCoP, and determine pilot site(s).

The project members visited five potential pilot sites from March to September in 2022, and evaluated the sites to select pilot sites.

The Project Manager proposed three pilot sites as shown in the table 2 at the 2nd JCC meeting in October 2022 and the proposal was approved.

Then the Managing Director of the PNGFA issued a letter to the logging companies of the three pilot sites stating that they had been selected as pilot sites for JICA-PNGFA project and requested their cooperation to the project in January 2023.

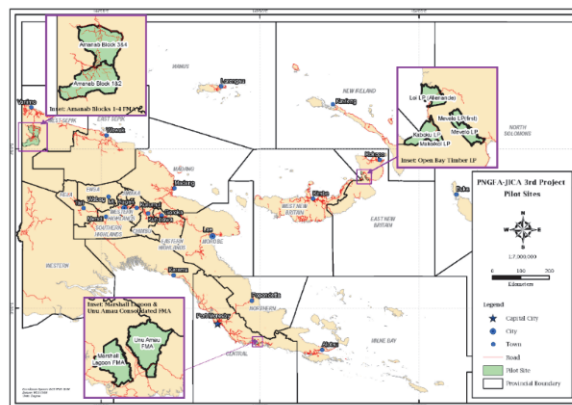


Fig1. Map of three pilot sites

Based on these actions, the project implemented various activities at the sites.

Table2. Outline of the 3 project's pilot sites (Proposed at 2nd JCC meeting in Oct 2022)

Concession name	Province	Permit Holder	Project Type	Areas
Marshall Lagoon & Unu Amau	Central	First Mark Limited	Forest Management Agreement (FMA)	17,730 ha
Amanab Blocks1-4	West Sepik	Amanab Forest Products Limited	FMA	214,418 ha
Open Bay	East New Britain	Open Bay Timber Limited	Plantation + natural forest	31,260 ha

Activity 1-4 At the pilot site(s), test the technologies identified by Activity 1-2.

After 3rd JCC meeting in March 2023, demonstration and trial of the monitoring tools was initiated by the initiative of JICA short-term experts to PNGFA officers including HQ officers, field officers in the pilot sites.

Project members discussed how to disseminate those monitoring tools to two stakeholders (PNGFA and logging companies). The level of test and dissemination of monitoring tools vary and they are described in the Table 3.

Regarding the “Mobile Offline Map”, the project members recognized its importance for improving logging monitoring and agreed to disseminate the Mobile Offline Map to PNGFA officers through the training on PMCP and LCoP. The details of the trainings are described in Activity 1-5.

The data map submission from companies to PNGFA is recognized as important action to improve logging operations and logging monitoring. Project members discussed the ideas of the activities, and short-term expert team developed the concept of “Data map submission” in March 2024. And short-term expert and PNGFA officer went to the pilot site (Marshall Lagoon FMA) to disseminate the “Dada map submission” to company forester using two materials (Qfield and QGIS) in April 2024. Based on the trial results,

the project members developed training contents and materials for PMCP/LCoP Training for Forest Industry starting from September 2024 described in the Activity 1-6.

The results of these monitoring tools testing and dissemination are summarized along with technical documents in the 'Dissemination Plan of PMCP and LCoP,' listed as No. 13 in the Annex 2 (List of Products).

Table3. Dissemination of monitoring tools to stakeholders

Level of test/dissemination Monitoring tools	Project member	Pilot site		Mid-term Workshop	Training	
		FA	PH		FA	PH
1. Mobile Offline Map (Qfield)	X	X	X	X	X	X
2. PMCP Check List	X	X	-	X	-	-
3-1. Drone knowledge	X	X	-	-	-	-
3-2. Drone image processing	X	X	-	-	-	-
4. LAN Map	X	-	-	X	-	-
5. Deforestation alert system	X	-	-	-	-	-
6. Data map submission	X	X	X	X	-	X
7. Model Set-up Plan (Open Bay)	X	X	X	-	-	-
8. QGIS	X	X	X	-	-	X

X Disseminated, - Not targeting

Activity 1-5 Identify effective way to disseminate PMCP and LCoP to the stakeholders, and provide necessary training for PNGFA officers to conduct the dissemination.

1-5-1 Proposal and approval of forest industry training at 4th JCC meeting

At the 3rd JCC meeting in March 2023, the JICA long-term expert proposed training plan including the content, expected trainees, durations and locations as shown in the table 4-1. The JCC members approved to implement the proposed training, and suggested that detail plans including budget would be coordinated by the working-level during implementation.

Table4-1. Outline of PNGFA staff training (Proposed at 3rd JCC meeting in Mar 2023)

1. <u>Objective:</u> Capacity building PNGFA officers to disseminate PMCP and LCoP to Permit Holder			
2. <u>Number of Trainings:</u> 3 training courses			
3. <u>Training Month:</u> September to November in 2023			
4. <u>Expected Trainees:</u> PNGFA's Project Supervisors and Monitoring Officers			
5. <u>Number of Trainees:</u> 10 to 20 for each trainings			
6. <u>Duration of Training:</u> About 5 days			
7. <u>Location of Training:</u> 3 locations as following			
Target Region	Maing Training venue	Field training (Accommodation)	
Central / Gulf / Western	Port Moresby (Hotel)	Marshal lagoon FMA (Guest house in Kupiano)	
Momase (East / West Sepick)	Vanimo (Hotel)	Amanab1-4 FMA (Logging camp and FA apartment)	
New Guinea Isrand	Kimbe (Hotel)	Settin Bay Lumber Company FMA (Hotel in Kimbe)	

1-5-2 Budget and actual expenditures of PNGFA officers training

After the JCC meeting, the project members discussed details of training including budget. Finally, both sides agreed and secured the budget. The details are in the 2nd Monitoring Sheet. The budget and actual expenditures are shown in the table 4-2.

Table4-2. Budget and actual expenditure for the training.

PNGFA/JICA REGION	PNGFA		JICA		Total	
	Budget	Actual	Budget	Actual	Budget	Actual
Southern	74,180	68,689	135,930	95,729	210,110	164,418
Momase	122,680	148,984	126,930	92,546	249,610	241,030
New Guinea Island	152,600	140,604	118,650	120,791	271,250	261,395
Total	349,460	358,276	381,510	309,067	730,970	667,343

1-5-3 Result of PNGFA officers training

Three regional trainings were conducted from September 2023 to March 2024 as shown in the Table 4-3. Through these trainings, target participants, who are responsible for field logging monitoring, improved their understanding of PMCP & LCoP as well as its field application. These trainings have significantly contributed to improve the logging monitoring capacity of PNGFA from the following points, (1) these trainings covered field officers in the country level, (2) second PMCP & LCoP training for PNGFA since 1996, (3) the revised LCoP was disseminated to PNGFA officers for the first time since its revision in 2020.

The result of the three regional training workshops are summarized in each training result reports (No.7, 8 and 9 in Annex 2) and the Fact Sheet No 4 (No4 in Annex 2).

Table4-3. Summary on PMCP / LCoP training to PNGFA officers (Sep 2023 to Mar 2024)

<u>Number of Trainings</u>: 3 Regional Trainings <u>Training Period</u>: September 2023 to March 2024 <u>Trainees</u>: Provincial Forest Managers, Project Supervisors and Monitoring Officers, and other field officers <u>Number of Trainees</u>: 72 trainees (20 to 28 for each training) <u>Duration of Training</u>: 5 days <u>Training Contents</u>: Lectures, Field training, Group Presentation, and Group Discussion <u>Regional training information</u>				
Target Region	Period	Trainees Number	Main Training venue	Field training (Accommodation)
1. Southern	Sep 25 to Sep 29	20	Port Moresby (Lamana Hotel)	Marshall Lagoon FMA (Guesthouses in Kupiano)
2. Momase	Oct 30 to Nov 3	24	Vanimo (Vanimo Beach Hotel)	Amanab1-4 FMA (Logging camp and FA apartment)
3. New Guinea Islands	Feb 27 to Mar 1	28	Kimbe (Hotel Gemesis)	Settin Bay Lumber FMA (Hotel Genesis in Kimbe)

Pictures. Training Workshop on PMCP/LCoP for PNGFA (Southern Region)



Opening Ceremony on PMCP/LCoP Training Workshop for Southern Region



Provided Materials



Lectures on PMCP/LCoP



Group Discussion



Field Training



Landing Training



Field Training



Certificate Award by Managing Director, PNGFA
(Mr. John Mosoro)



Certificate Award by JICA Chief Representative
(Mr. Matsuoka Hideaki)

Activity 1-6 Support PNGFA officers to disseminate PMCP and LCoP to timber company foresters.

1-6-1 Proposal and approval of forest industry training at 4th JCC meeting

At the 4th JCC meeting in April 2024, the Project Manager proposed training plan including content, expected trainees, durations and locations as shown in the table 5. In addition, collaboration with Expertise France (EF) and USAID to implement the training including budget sharing was proposed. The JCC members approved to implement the proposed training collaborating with the two development partners.

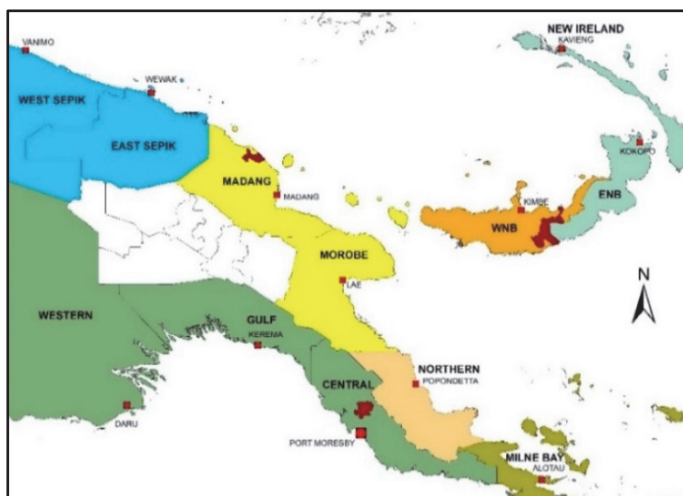


Fig 2. Seven Training Regions

Table5-1. Outline of the PNGFA staff training (Proposed at 4th JCC meeting in Apr 2024)

1. **Objective:** Capacity building of Permit Holders to implement logging operation complying with PMCP and revised LCoP
2. **Planning Period:** March - June 2024
3. **Dissemination Plan:** August - November 2024 (JICA-PNGFA Project - 3 trainings), February - August 2025 (4 trainings with EF)

Region	Participant Province (number of projects)	Training Province	Implementation period	Field	Collaborative Partner
Southern1	Central(4), Western(5), Gulf(4)	Central	Oct 21-26,2024	Vanapa TA	JICA-EF
Southern2	Oro (3)	Oro	2025		EF
Southern3	Milen Bay (6)	Milne Bay	2025		EF
Momase1	Sandaun (3), East Sepik(1)	Sandaun	2025		EF
Momase2	Madang (6), Morobe (1)	Madang	Nov 18-23,2024	Kumil TRP	JICA-USAID
NGI 1	West New Britain (NB) (7)	West NB	Sep 23-28, 2024	Ania Kapiura FMA	JICA-EF
NGI 2	East NB (12), New Ireland (5)	New Ireland	2025		EF

4. **Expected Trainees:** Planner, Surveyor, and Logging Supervisor
5. **Target project (concession):** FMA, TRP, LFA, FCA
6. **Number of Trainees:** not exceed 30 for each training
7. **Company List:** 22 PJs (Southern), 11 PJs (Momase), 24 PJs (NGI): Total 57 PJs
8. **Number of Trainings:** 7 trainings (Refer the map and table)
9. **Duration of Training:** About 6 days
10. **Training Contents:** (1) Lecture (1day), (2) Field Training (3days), (3)QGIS&QField (2days)
11. **Trainers:** Mr. Simon Peter and Mr. Geno Kini, Field Operation, Mapping Branch, JICA
12. **Collaborating Partner:** Expertise France, USAID

1-6-2 Budget and actual expenditures of forest industry training

After the JCC meeting, a JICA long-term expert coordinated the budget and actual

expenditures with PNGFA, EF, USAID and other stakeholders. The budget and actual expenditures are shown in the table 5-2.

Table5-2. Budget and actual expenditure for the training.

	Budget (PNG Kina)				Actual Expenditures (PNG Kina)			
	JICA	EF	USAID	Total	JICA	EF	USAID	Total
1 st Training	37,780	235,300	-	273,080	42,668	183,601	-	226,269
2 nd Training	39,122	150,711	-	189,833	23,729	122,842	-	146,571
3 rd Training	83,702	-	213,030	296,732	66,298	-	139,314	205,612
Total	160,604	386,011	213,030	759,645	132,695	306,443	139,314	578,452

1-6-3 Result of forest industry training

Three regional trainings were conducted from September to November 2024 collaborating with Expertise France and USAID as shown in the Table 5-3.

These workshops have been positively evaluated as effective and improved participants' competencies in implementing sustainable logging practices from the trainees' responses to the post-training questionnaire.

The results of the three regional training workshops are summarized in each training result report (No.10, 11 and 12 in Annex2) and the Fact Sheet No 6 (No 6 in Annex 2 (List of Products)).

Table5-3. Summary on PMCP / LCoP training to Forest Industry (Sep to Nov 2024)

Region (Target Provinces)	Dates (6 days)	Training venue		Trainees	
		Main	Field (Operator)	Num of Company	Num of staff
NGI 1 (West New Britain)	Sep 23 - Sep 28	Kimbe (Hotel Gemesis)	Ania Kapiura FMA (Settin Bay Lumber)	5	12
Southern1 (Central, Gulf, Western)	Oct 21 - Oct 26	Port Moresby (Lamana Hotel)	North Vanapa TA (Gimiko)	10	14
Momase2 (Madang, Morobe)	Nov 18 - Nov 23	Madang (Madang Resort Hotel)	Kumil TRP (Madang Timber Ltd)	9	13
Total				24	39

Pictures. Training Workshop on PMCP/LCoP for PNGFA (Region: NGI 1)



Opening Ceremony for Training Workshop on PMCP/LCoP (Region: NGI 1)



Pictures. Training Workshop on PMCP/LCoP for PNGFA (Region: Southern1)



Pictures. Training Workshop on PMCP/LCoP for PNGFA (Region: Momase2)



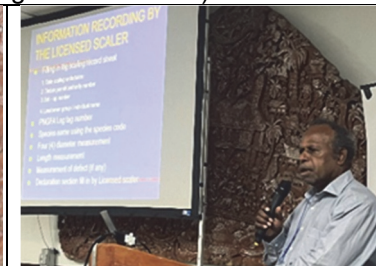
Opening Ceremony for Training Workshop on PMCP/LCoP (Region: Momase 2)



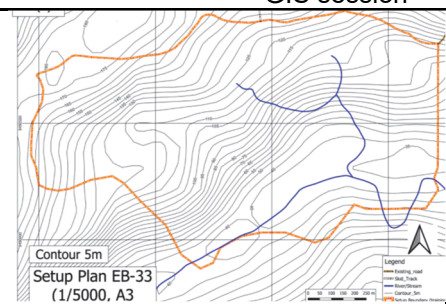
GIS session



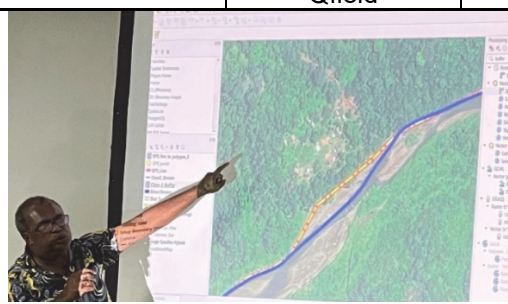
Qfield



Log scaling Lecture



Set up Map with 5m contour & river



Google satellite image of setup area



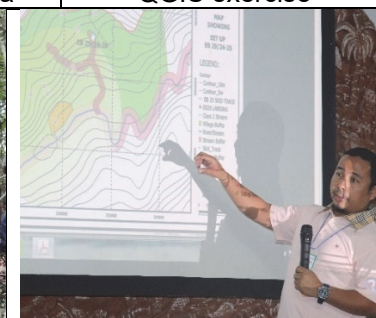
QGIS exercise



Felling



Special Management Zone



Company Presentation



Awarding from PNGFA to trainee



Awarding from JICA to trainee



Awarding from USAID to trainee

Activity 1-7 Prepare programs and materials introducing outputs of the project and

help PNGFA to disseminate the outputs to the stakeholders in workshop(s).

The project held a total of 10 workshops during the project period to disseminate the project outcomes. To conduct these workshops, the project prepared dissemination materials based on the project outcomes.

These dissemination materials were primarily developed by JICA experts, and the contents of these developed materials are described in each activity section.

The list and summary of the workshops is shown in the table below.

Table 6. Summary and List of Workshop to disseminate result of Project outcomes

Workshop (WS) title	Output Level	Dates	Venue	Participants	Activity	Collaboration
1. PMCP/LCoP Training WS for PNGFA officers (Southern)	Output1	Sep 25 - 29, 2022	Port Moresby (Lamana Hotel)	20*	1-5	-
2. PMCP/LCoP Training WS for PNGFA officers (Momase)	Output1	Oct 30 - Nov 3, 2022	Vanimo(Vanimo Beach Hotel)	24*	1-5	-
3. PMCP/LCoP Training WS for PNGFA officers (NGI)	Output1	Feb 27 - Mar 1, 2023	Kimbe (Hotel Gemesis)	28*	1-5	-
4. Mid-term Project Workshop	Project	22 April 2023	Port Moresby (Lamana Hotel)	39	-	-
5. PMCP/LCoP Training WS for Forest Industry (NGI1)	Output1	Sep 23 - 28, 2023	Kimbe (Hotel Gemesis)	12*	1-6	EF
6. PMCP/LCoP Training WS for Forest Industry (Southern1)	Output1	Oct 21 - 26, 2023	Port Moresby (Lamana Hotel)	14*	1-6	EF
7. PMCP/LCoP Training WS for Forest Industry (Momase2)	Output1	Nov 18 - 23, 2023	Madang (Madang Resort Hotel)	13*	1-6	USA ID
8. Forest Carbon Monitoring WS	Output3	Feb 24-26 2025	Port Moresby (Lamana Hotel)	20	3-7	EF
9. Finalization of User Manual for Assisted Natural Regeneration	Output2	Mar 4 – 6, 2025	Port Moresby (Lamana Hotel)	17	2-5	EF
10. Final Project Workshop	Project	25 March 2025	Port Moresby (Hilton Hotel(P))	40*	-	-

* The number of PMCP/LCoP Training WS is only trainees (Exclude JICA team and PNGFA trainers and two chief trainers). The number of final WS is invited participants.

1-3-2. Output 2: Promotion of Assisted Natural Regeneration (Planned and Actual)

Plan: The ability of stakeholders (Government, Forest industry, Landowners, etc.) to effectively carry out natural regeneration practice is improved.

Actual (Summary):

The project identified key stakeholders to disseminate natural regeneration activities as PNGFA (field) officers, employees of logging companies, and land owners. The project implemented the following activities:

- **Implementation of Pilot activities of natural regeneration at 3 pilot sites** include “Identification of stakeholders and consensus building including exchanging MoU”

(Activity 2-2) and actual implementation of project such as seedling production and planting seedlings (Activity 2-3)

- **Development of User manual for assisted natural regeneration** (Activity 2-4, Activity 2-5)

Planned 5 activities (Activity 2-1 to Activity 2-5) and actual results for Output2

To achieve the output 2, the following five activities (Activity 2-1 to Activity 2-5) were planned, and the details of each plan and actual result is as follows.

Activity 2-1 Find out issues for managing natural regeneration after logging.

During the detailed planning survey, project members collected necessary information through documents review, visiting regeneration sites, consultation with various stakeholders.

At the 2nd JCC meeting, "Ideas for pilot activities on natural regeneration and the definition of the term of the natural regeneration for this project" were proposed and approved. The proposal is summarized in the table 7-1.

Table7-1. Ideas for the pilot activities and the definition of the natural regeneration (Proposed at the 2nd JCC meeting in Oct 2022)

• <u>Definition of Natural Regeneration:</u> related descriptions of regeneration in LCoP. Examples; (1) Rehabilitation and restoration of logged over areas after selecting logging, (2) Enrichment planting, (3) Competitive vegetation removal, (4) Tree Standing Improvement (Vine cutting etc.,) • <u>Stakeholder:</u> PNGFA, Logging Companies, Landowners • <u>Activity Areas:</u> Logged over (logging) Set-up(s) in pilot sites • <u>Flow of pilot activities:</u> (1) Identify sites, (2) Reference reviews, (3) Specie selections, (4) Design and discussion of activities with stakeholders, (5) Make and exchange MoU, (6) Start Pilot Activities

Activity 2-2 Identify key stakeholders, and examine implementation structure and technical improvement measures for solving the issues identified in Activity 2-1.

At the 3rd JCC meeting, "target tree species at each pilot site (Table 7-2)" as well as "Ideas on pilot activities at 3 pilot sites" were presented and approved.

Table7-2. Target tree species proposed at the 3rd JCC meeting in Mar 2023

<u>Pilot site1: Marshal Lagoon & UNU Amau Consolidated FMA (5 species)</u>	
Taun (<i>Pometia pinnata</i>)	* overlapping with pilot site3
Hopea Heavy (<i>Hopea iriana</i> / <i>Hopea Glabrifolia</i>)	
PNG Walnut (<i>Dracontomelon dao</i>)	
Rosewood (<i>Pterocarpus indicus</i>)	* overlapping with pilot site3
Mersawa (<i>Anisoptera thurifera</i>)	
<u>Pilot site2: Amanab Block1-4 & Imonda Consolidated FMA (1 specie)</u>	
Kwila (<i>Intsia</i>)	
<u>Pilot site3: Open Bay (5 species)</u>	

Taun (*Pometia pinnata*) * overlapping with pilot site1
 Kalophilum (*Calophyllum euryphyllum*)
 Rosewood (*Pterocarpus indicus*) * overlapping with pilot site1
 Malus (*Homalium foetidum*)
 Kamarere (*Eucalyptus degulpta*)

Project members discussed how to implement pilot activities in 3 pilot sites with stakeholders including field PNGFA officers, companies, and landowners. And PNGFA and other stakeholders exchanged the MoU as shown in the table 7-3.

These MoUs are evidence of the mutual understanding and agreement among stakeholders and these MoUs specify the outlines of activities as well as stakeholder's roles. The pilot activities were conducted based on the MoUs.

Table7-3. Outline of MoU with stakeholders for pilot activities (Mar 2023 – Aug 2023)

Pilot Sites	Permit Holder (PH)	MoU signers	PNGFA signer	Signed month	MoU contents
1. Marshall Lagoon & Unu Amau	First Mark Limited	1. PNGFA 2. PH 3. 3 clans	1. Director of Forest Policy & Planning 2. Director of Field Operation	July 2023	Natural regeneration
2. Amanab Blocks1-4	Amanab Forest Products Limited	1. PNGFA 2. 3 clans	Provincial Forest Manager	March 2023	Natural regeneration
3. Open Bay	Open Bay Timbers Limited	1. PNGFA 2. PH	Managing Director	August 2023	Model Setup plan Natural regeneration Carbon monitoring

Activity 2-3 Conduct pilot-activities on natural regeneration by PNGFA officers and key stakeholders at the pilot site(s) determined in Activity 1-3.

The pilot-activities on natural regeneration has been conducted in the 3 pilot sites. The outline of the pilot-activities is summarized in the table 8-1, table 8-2 and table 8-3 respectively depend on the pilot sites.

Table8-1. Outline of pilot activities in Marshall Lagoon (Mar 2023 – Jan 2025)

Schedule	Details of Pilot Activity	Output
Mar 2023	Identified 3 Clans and 3 set-ups	
Mar - Aug 2023	Consensus building among stakeholders	
Aug 2023	Signing MoU	MoU
Nov 2023	Made Implementation Plan	Implementation Plan (No14 in Annex2)
Feb - Mar 2024	Temporary nursery establishment	Two nurseries, nursery design
Mar 2024	Wildering collection dissemination	Dissemination pamphlet
Apr 2024	Site preparations	
Apr - Jul 2024	Site preparations dissemination to clans	Dissemination Pamphlet
Jul - Nov 2024	Planting (Enrichment Planting)	Dissemination Pamphlet

	dissemination to clans, Monitoring	
Nov - Jan2025	Seed collection & Seedling Production dissemination to clans Dissemination of Draft User Manual	Dissemination Pamphlet Result of activities

Pictures. Pilot activities in Marshall Lagoon (Mar 2023 – Jan 2025)



Table8-2. Outline of pilot activities in Amanb Block 1-4 (Oct 2022 – Nov 2024)

Schedule	Details of Pilot Activity	Output
Oct 2022	Identified 3 Clans and 3 set-ups	
Mar 2023	Consensus building among stakeholders and signing MoU	MoU
Mar 2023	Made Implementation Plan	Implementation Plan
Mar – Apr 2023	Seedling productions	Seedlings
Sep – Oct 2023	Site preparation and enrichment planting	3 sites establishment
Oct 2023	Training on enrichment planting	
Apr 2024	Monitoring (Survival rate, growth)	
Aug 2024	Monitoring (Survival rate, growth)	
Nov 2024	Monitoring (Survival rate, growth) Dissemination of Draft User Manual	

Pictures. Pilot activities in Amanb Block 1-4 (Oct 2022 – Nov 2024)



Table8-3. Outline of pilot activities in Open Bay (May 2023 – Dec 2024)

Schedule	Details of Pilot Activity	Output
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May 2023	Identified 1 set-up, collected wildings	Wildings
July 2023	Made Implementation Plan	Implementation Plan
May - Aug 2023	Consensus building among stakeholders and signing MoU	MoU
Mar 2024	Field discussion among stakeholders	
Nov 2024	Selective logging at model site Dissemination of Draft User Manual	
Dec 2024	Site preparation and enrichment planting	

Pictures. Pilot activities in Open Bay (May 2023 – Dec 2024)

		
Wildling (May 2023)	Field Survey (March 2024)	Plated seedling (Taun) (December 2024)

Activity 2-4 Develop the draft user manual in cooperation with the key stakeholders

Project members discussed the concepts of user manual as shown in the table 9-1, a short-term expert took initiative to make the first draft and discussed it with project members including Forest Research Institute (FRI) in October 2023.

Table9-1. Concepts of user manual (Sep – Oct 2023)

● <u>Background</u>: No guidance for natural regeneration although the “National Strategies for Reforestation and Afforestation (2020-2024)” describes that the assisted natural regeneration is one of the forest replenishment measures. ● <u>Expected user</u>: PNGFA officers (Natural Forest Management, which is as section responsible for natural regeneration in PNGFA), companies (Some companies have responsibility of restoration of logged over areas according to their agreement) ● <u>Objective</u>: Promote natural regeneration activity ● <u>Main contents</u>: Introduce the steps to implement assisted natural regeneration after selective logging ● <u>Why natural regeneration</u>: Restore the stock of commercial tree species after selective logging ● <u>Main measures</u>: Enrichment Planting

Considering the concept above, the draft user manual was developed to promote natural regeneration activity by stakeholders including PNGFA officers and logging companies, integrating the information from FRI, project experiences at the Amanab 1-4 pilot sites and Marshall Lagoon pilot sites.

A long-term expert presented the concept at 4th JCC meeting and obtained approval

from JCC members on April 2024.

The short-term expert presented the draft manual at the Mid-term workshop in April 2024. The participants provided various inputs toward finalization during the workshop.

The project members discussed how to finalize the draft manual until the end of the project based on the draft manual.

Activity 2-5 Finalize the user manual to disseminate natural regeneration techniques to PNGFA officers and key stakeholders.

Regarding the first edition of User Manual developed under Activity 2-4, long-term and short-term experts provided explanations to stakeholders at three pilot sites and obtained their feedback. In addition, a questionnaire survey was conducted to assess the understanding of the draft user manual among a total of 10 stakeholders as shown in the Table 9-2.

Table9-2. Outline of Technical Workshop to finalize user manual

● <u>Explanation</u>: Present manual for stakeholders at 3 pilot sites ● <u>Period</u>: October 2024 – January 2025 ● <u>Shared Manual</u>: First Edition of User Manual ● <u>Location</u>: Three pilot sites ● <u>Participants</u>: Stakeholders: 10 at pilot sites (4 PNGFA field officers & 6 company staff) • Marshall Lagoon: 2 company staff, 1 PNGFA officer • Amanab 1-4: 0 company staff, 3 PNGFA officer • Open Bay: 4 company staff, 0 PNGFA officer

Then, the long-term experts updated the first edition of User Manual to the second edition by incorporating feedback from PNGFA headquarters, pilot site representatives, and the outcomes of pilot activities conducted at Marshall Lagoon & Unu Amau FMA.

From March 4 to 6, a workshop was held to finalize the User Manual for Assisted Natural Regeneration. During the workshop, PNGFA representatives and JICA experts reviewed the second edition of the User Manual and finalized the manual. This workshop was conducted as a collaborative activity with EF, and they supported funding and arranged the travel logistic from outside of Port Moresby and workshop venue.

The workshop was attended by two JICA long-term experts and representatives from PNGFA, including the Project Manager, Field Operation Directorate, R&A Directorate, FRI, Natural Forest Management Coordinator, and stakeholders from the three pilot sites. The details of the workshop are outlined in Table 9-3.

Additionally, the contents of the manual are presented in Table 9-4. The “User Manual for Assisted Natural Regeneration” is No 15 in the List of Products (Annex 2).

Table9-3. Outline of Technical Workshop to finalize user manual

● <u>Workshop</u>: Finalization of User Manual for Assisted Natural Regeneration
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- Dates: 4th – 6th March 2025 (3days)
- Venue: Lamana Hotel
- Objectives:
 - 1) To **share the experience** of Natural Regeneration
 - 2) To **finalize the user manual** of Assisted Natural Regeneration
 - 3) To **discuss next actions** to disseminate Natural Regeneration to stakeholders
- Participants: 11 PNGFA key technical officers,
 - **5 officers from PNGFA HQ** (2 x Field Operation Directorate, 2 x Reforestation & Afforestation Directorate, 1 x Forest Policy & Planning Directorate)
 - **3 officers from 3 pilot sites** (Marshall Lagoon, Amanab, Open Bay)
 - **Natural Forest Management Coordinator** (Morobe province)
 - **Forest Research Institute** (1 officer)
 - **Provincial Forest Manager in Central Province**
- Co-funded by: Expertise France – EU-FCCB Program

Table9-4. Contents of user manual

CHAPTER 1. BACKGROUND CHAPTER 2. OBJECTIVE AND USERS 1. Purpose of the Manual 2. Five Phases of Assisted Natural Regeneration 3. Definition and Scope of Assisted Natural Regeneration 4. Intended Users of Manual (Project Implementation Body) 5. Role of the Supervisor CHAPTER 3. PRELIMINARY SURVEY 1. Overview of the Preliminary Survey Phase 2. Conditions for Selecting a Potential Site 3. Utilizing Maps for Screening Potential Sites 4. Potential Site Selection Process 5. Next Step: Consensus Building with Stakeholders CHAPTER 4. CONSENSUS BUILDING 1. Purpose and Basic Policy of Consensus-Building 2. Key Aspects for Consensus-Building 3. Stakeholder's Consensus Building Process 4. Responsibilities of the Implementing Body 5. Next Step: Project Planning	CHAPTER 5. PLANNING PHASE 1. Introduction 2. Implementation of Baseline Surveys 3. Determination of tProject Area and ANR Contents 4. Development of the Project Implementation Plan CHAPTER 6. IMPLEMENTATION PHASE 1. Introduction 2. Permanent Nursery Establishment 3. Temporary Nursery 4. Seedling Production 5. Site Preparation for Enrichment Planting 6. Enrichment Planting 7. Weeding CHAPTER 7. MONITORING PHASE 1. Overview 2. Preparing a Monitoring Plan 3. Monitoring Implementation 4. Analysis of Monitoring Results and Measures 5. Applicability of this Monitoring
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User Manual for ANR

Opening Ceremony for Technical WS to finalize Manual

1-3-3. Output 3: Development of Field Carbon Monitoring Method (Plan and Actual)

Plan: Field carbon monitoring procedures for logging operation are developed.

Actual (Summary):

The project identified key operational indicators to assess the carbon emission from logging and developed the method to estimate carbon emission from logging as set-up level. The project implemented the following activities:

- **Developed field carbon monitoring method at set up level** (Activity 3-3)
- **Conducted field carbon monitoring** applying the method at 2 pilot sites, and **estimated carbon emission** at 3 setup sites (Activity 3-3)
- **Conducted five training sessions for field carbon monitoring** (Activity 3-4)
- **Compile proposals** for forest carbon monitoring and reducing emissions from logging operations (Activity 3-6)

Planned 7 activities (Activity 3-1 to Activity 3-7) and actual results for Output3

To achieve the output 3, the following seven activities (Activity 3-1 to Activity 3-7) were planned, and the details of each plan and actual result is as follows.

Activity 3-1 Review the effects of complying with PMCP and LCoP to low emission logging activities.

An analysis was undertaken to extract specific elements that influence carbon loss parameters from logging.

Project members had meeting to discuss the suggestions from the monitoring mission from JICA HQ, which included the definition of “low emission logging”. During the discussion, “low emission logging” was defined as the reduction of carbon emissions from logging operations through the compliance with LCoP.

The project also aimed to use internationally recognized methodologies such as

Activity 3-2 Identify indicators to assess low emission logging activities (e.g. Area for roads and log landings, damaged woods due to felling, etc.).)

The emission indicators had been identified through a literature review including existing Reduced Impact Logging methodology such as Verified Carbon Standard (VCS) methodology No. 35), and a trial monitoring to identify indicators was conducted at a pilot site in March 2023.

Sources of emissions					Measurement objects	Measurement values
Forest carbon stock damage from selective logging	Carbon stock damage in logging gaps due to tree felling	Timber-trees	Log volumes	Extracted log volumes	Lying/removed deadwood	Length (L), Diameters of top and bottom of logs (D1-D4)
				Non extracted log volumes: trimmed, abandoned, forgotten	Lying deadwood in logs	Length (L), Diameters of top and bottom of logs (D1-D4)
			Non log volumes	Stumps	Stump	Height (H), Diameters of stump (D1-D2)
				Tops, Head logs	Lying deadwood	Length (L), Diameters of head logs/tops (D1-D2)
		Other trees	Uprooted volumes		Lying deadwood (G)	Length (L), Diameters of uprooted trees (D1-D2)
			Snapped trees	Above the first branch	live tree (mortality<100%)	Not accounted here
				Below the first branch	Standing deadwood (S)	Height (H), DBH
	Area Damaged due to log extraction	Skid trails			Standing deadwood (S)	Height (H), DBH
					Lying deadwood (G)	Length (L), Diameters lying deadwood (D1-D2)
					Area removed	Skid trail width, length, area
			Log landings		Area removed	Landing width, length, area
			Haul logging roads		Area removed	Haul road width, length, area
			Others such as camps etc.		Area removed	Not accounted here

Fig 3. List of Carbon Monitoring Survey Indicators

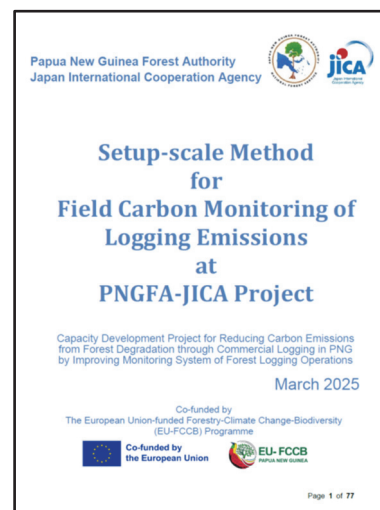
Activity 3-3 Identify and develop methodology for monitoring, recording, reporting or reducing emission level from logging operations through trials and validations in the pilot site(s).

The Table 10-1 provides the process of developing the methodology and related trials and verifications.

The methodology "Methodology of Field Carbon Monitoring at Setup Level" was developed in July 2024.

The trials and verifications were conducted at two pilot sites, and two reports on the results were prepared from July 2024 to December 2024.

As the project manual for forest carbon monitoring, "Setup-scale Method for Field Carbon Monitoring of Logging Emissions at PNGFA-JICA Project (No18 in the List of Products)" was prepared and presented at final



workshop on March 2025.

Table10-1. Process of developing the methodology and related activities

1) <u>Discussion of direction of methodology (November 2023)</u>: Short-term expert Mr. Haraguchi led a meeting with the PNGFA to discuss Output 3. The main outcomes of the discussion were: Objective of Carbon Monitoring Method Development: • Access to climate finance (alternative income sources beyond logging). • Contribution to the Nationally Determined Contributions (NDC). • Achievement of government Sustainable Development Goals (SDGs). Overview of the Method being Developed: • To measure carbon emissions from low-emission logging (compliance of LCoP), the method will refer to internationally recognized methodologies such as VM0035 (Reduced Impact Logging). • Develop a methodology to measure carbon emissions from logging activities (felling, skid trails, roads, log landings, etc.) at set-up level. • The development period for the methodology is until March 2024. Expected Level of Achievement for the developed Method: • Develop a practical methodology. • However, substantial time and effort will be required to collect the necessary data (e.g., VM0035) to establish a complete methodology. • Conduct trial carbon monitoring at the pilot site(s) using the methodology Outcomes: Summary of discussions (Discussion Session for Output 3 on Project for Common Understanding of Purpose and Utilization of Carbon Monitoring). 2) <u>Discussion on the Methodology (November 2023)</u>: Short-term expert Mr. Salim discussed the details of monitoring methodology under development with PNGFA. Direction of Developed Methodology: • Development of a methodology to measure carbon emissions from logging activities (felling, skid trails, roads, log landings, etc.). • Measurement will be at the setup level. Outcome: Training plan - Preliminary information and concepts 3) <u>Presentation on the Methodology (July 8–9, 2024)</u>: Conducted by short-term expert Mr. Salim, attended by 21 PNGFA officers. Contents: Explanation of the methodology, discussions, and data collection methods for field surveys. Outcome: Report “Setup-scale methodology for trial monitoring of logging emissions in JICA-PNGFA project pilot concessions in Papua New Guinea” 4) <u>First Field Survey Using the Methodology (July 14–18, 2024)</u>: Short-term expert Mr. Salim conducted the first field survey, with 12 participants (6 PNGFA officers, 6 JICA members) Contents: Collection of required logging data at two setup sites based on the methodology (Location: Marshall Lagoon Unu Amau FMA). Outcome: Survey data and results report “First Results of the Carbon Performance of Logging Operations in Papua New Guinea Using the Setup-Scale Methodology Developed for Trial Monitoring in Concession Sites of the JICA-PNGFA Project” 5) <u>Second Field Survey (November 25–27, 2024)</u>: Short-term experts Mr. Koide and Mr. Kato led the second field survey, with four Forest Corporation staff and staff from OBT company. Contents: Carbon monitoring survey conducted at Open Bay. Outcome: Survey data and results report (Report on Trial Field Carbon Monitoring
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on Logging Operations at Open Bay Timber, East New Britain Province).

- 6) **Presentation of Calculation Methods and first monitoring result (December 5, 2024)**: Conducted by short-term expert Mr. Kato, attended by 25 Forest Corporation staff and one EF representative.

Contents:

- Revised field survey methods.
- Calculation methods and procedures for emissions from logging operations.
- Results of the field monitoring at Marshall Lagoon & UnuAmau FMA.

Outcome: Training materials (Sharing Results of Trial Field Survey at Marshall Lagoon & Unu Amau FMA).

- 7) **Presentation of Final Carbon Monitoring Method (February 18–21, 2025)**:

Conducted by short-term expert Mr. Kato, attended by participants from PNGFA and EF.

Contents:

- Revised measurement and calculation methods.
- Training on measurement and calculation methods.
- Proposals and summary for promoting low-emission logging.

Outcome: Methods Manual.

- Manual for Field Logging Emission Measurements
- Manual for Field Logging Carbon Emission Calculation
- Excel Spread Sheet for carbon emission calculation

Act 3-4 Develop training program and provide necessary trainings to adopt carbon monitoring for PNGFA field officers.

We have conducted five training sessions to introduce carbon monitoring as listed in the Table 10-2 below.

As a result, the following have been achieved:

1. Understanding of the methodology developed in Activity 3-3.
2. Understanding and practical application of field carbon monitoring methods.
3. Calculation of carbon emissions based on field record sheets.
4. Understanding and discussion of carbon monitoring results.

Table10-2. List of Five Training Sessions on Forest Field Carbon Monitoring

- 0) **Discussion on Training Content (November 2023)**: The short-term expert, Salim, held discussions with PNGFA regarding the training plan and its implementation.
- **Training Content & Implementation Plan**: After developing the monitoring methodology (Activity 3-3), training will be conducted to implement the developed methodology. The training will be held at pilot sites at the setup level, including data collection.
 - **Deliverable**: Training Plan - *Preliminary Information and Concepts (Training on Carbon Performance Assessment in Logging Concessions)*
- 1) **First Training Session (July 8–9, 2024)**: Conducted by short-term expert Salim, with 21 participants from PNGFA.
- **Training Content**: Developed methodology and field measurement methods.
 - **Deliverable**: *Training & Workshop Sessions (Field Monitoring of Emission Levels Due to Logging Operations in the JICA-PNGFA Project Pilot Sites)*
- 2) **Second Training Session (July 14–18, 2024)**: The first field training conducted by short-term expert Salim, with six participants from PNGFA.

- **Training Content:** On-site practical training through field surveys (Location: Marshall Lagoon Unu Amau FMA).
 - **Deliverable:** Survey data and report - *First Results of the Carbon Performance of Logging Operations in Papua New Guinea Using the Setup-Scale Methodology Developed for Trial Monitoring in Concession Sites of the JICA-PNGFA Project.*
- 3) Third Training Session (November 25–27, 2024):** Conducted by short-term experts Koide and Kato, focusing on the second field survey, with four participants from the PNGFA and staff from OBT company.
- **Training Content:** Carbon monitoring survey at Open Bay.
 - **Deliverable:** Survey data and results report - *Report on Trial Field Carbon Monitoring on Logging Operations at Open Bay Timber, East New Britain Province.*
- 4) Fourth Training Session (December 5, 2024):** Conducted by short-term expert Kato, with 25 participants from PNGFA and one from EF.
- **Training Content:**
 1. Revised field carbon monitoring survey procedures.
 2. Calculation methods and procedures for emissions from logging operations.
 3. Results of the July field survey.
 - **Deliverable:** Training materials - *Sharing the Result of Trial Field Survey at Marshall Lagoon.*
- 5) Fifth Training Session (February 18–21, 2025):** Conducted by short-term expert Kato, with participants from PNGFA and EF.
- **Training Content:**
 1. Training on measurement and calculation methods.
 2. Discussion and Consideration of promoting low-emission logging.
 - **Deliverable:** Training materials.

Pictures of Five Training Sessions on Forest Field Carbon Monitoring



Activity 3-5 Compile proposals to promote the implementation of low emission logging

The project compiled proposals to promote low-emission logging by defining low emission logging, identifying emission indicators, developing a monitoring methodology, conducting capacity building, and proposing measures to scale up field carbon monitoring for future carbon project.

The following measures were conducted and proposed to facilitate the implementation of low-emission logging:

- **Definition of Low-Emission Logging:** The project defined low-emission logging as emission reductions achieved through compliance with PMCP and LCoP, aligning with Reduced Impact Logging (RIL) principles. This definition was agreed through discussions with PNGFA after suggestion from JICA HQ (Activity 3-1).
- **Identification of Emission Indicators:** The project identified emission indicators such as Hauling, Skidding, and Felling after reviewing the internationally certified methodology for RIL of VM0035 (Activity 3-2).
- **Development of Carbon Monitoring Methodology and trials:** A methodology for estimating emissions from logging operations was developed and trialed at two pilot sites (Activity 3-3).
- **Capacity Building for PNGFA Officers:** A total of five training sessions were conducted to enhance PNGFA's ability to implement carbon monitoring and evaluate emission levels (Activity 3-4).
- **Proposal for Promoting Low-Emission Logging:** In July 2024, short-term expert Salim developed a proposal to promote low emission logging. This proposal emphasizes securing the necessary number of samples at the concession and provincial levels through the ongoing field carbon monitoring at the pilot sites, facilitating the implementation of a carbon project related to Reduced Impact Logging.

Activity 3-6 Compile proposals for forest carbon monitoring and reducing emissions from logging operations on the basis of the activity 3-1 to the activity 3-5

The following activities in Table 10-3 were undertaken to develop proposals for forest carbon monitoring and reducing emissions from logging operations:

Table10-3. Activities to develop proposal for forest carbon monitoring and reducing emissions from logging operation

- | |
|---|
| <ul style="list-style-type: none">● Defining the purpose of forest carbon monitoring: Discussions were held to clarify the objectives, emphasizing the role of carbon monitoring in accessing climate finance, contributing to Nationally Determined Contributions (NDC), and aligning with Sustainable Development Goals (SDGs).● Developing a carbon monitoring methodology: A methodology was established to measure emissions from logging activities, referencing internationally recognized standards such as VM0035.● Training PNGFA officers: A series of five training sessions were conducted to |
|---|

enhance capacity in carbon monitoring and emission calculations.

- **Conducting field surveys at two pilot sites:** Data collection was carried out using the developed methodology, and emissions from logging operations were calculated.
- **Producing the first-ever report on carbon emissions from logging in PNG:** This report marks the first attempt to measure carbon emissions from logging in PNG.

Based on the outcomes of Activities 3-1 to 3-5, the project compiled proposals for forest carbon monitoring and emission reductions from logging operations. These proposals aim to continue and expand the scope of carbon monitoring, assess the impact of LCoP compliance on carbon emissions, and explore opportunities for carbon projects, ultimately contributing to the achievement of PNG's NDC and the mitigation of global warming.

The key proposals are in the Table 10-4.

Table 10-4. Recommendation for forest carbon monitoring and reducing logging emission

Recommendation for forest carbon monitoring and reducing emission from logging

1. **Accumulate field carbon monitoring data:** Using the project outcomes of carbon monitoring methods to accumulate more carbon emission data at set-up level.
2. **Institutional arrangement:** As forest carbon monitoring is a new initiative for PNGFA, a project team needs to be established to ensure its continuation. This team should be composed of related technical directorates.
3. **Expand field carbon monitoring:** Expand carbon monitoring from the setup level to concession and provincial levels to assess carbon emissions from logging operations on a broader scale.
4. **Working with Expertise France (EF):** Working with EF, Key actions of carbon monitoring in 2025: (1) Identify province, (2) Plan carbon monitoring (numbers & types of projects and setups, project types, and forest classification (primary or secondary)). (3) Technical sessions (Identification of operational practices to reduce carbon emissions (Bulldozer and Chainsaw operators, Data Exchange), Capacity building, Refinement of method)
5. **Assess emission reduction by LCoP compliance:** (1) Identify operational practices in LCoP contributing to emission reduction, (2) Compare emission level between compliance and non-compliance operations, (3) Assess the effect of the carbon emission reduction from the compliance of LCoP.
6. **Pursue an opportunity for forest carbon project:** Accumulate sufficient emission data from logging operations through the Actions above, and pursue an opportunity to develop a forest carbon project.
7. **Assess logging emission and explore measures for its reduction:** Conduct a comprehensive assessment of logging emissions and explore measures for emission reduction. By utilizing the results, contribute to the achievement of PNG's Nationally Determined Contribution and global climate change mitigation efforts.

Activity 3-7 Organize Workshop to disseminate the results of project activities

The project organized a total of 10 workshops, as shown in Table 6 of Activity 1-7, to disseminate the project outcomes to stakeholders.

2. Achievements of the Project

2-1 Outputs and indicators (Target values and actual values achieved at completion)

There are three outputs and nine indicators to evaluate the achievement at output level. The evaluation of achievement based on the nine indicators for the three outputs are provided below.

Output1: The Planning, Monitoring and Control Procedure (PMCP) and the Logging Code of Practice (LCoP) are well understood and applied by project stakeholders (Government, Forest industry, etc).

Indicator 1-1 Not lower than 80% of PNGFA officers, who received the training, improves understanding of PMCP and LCoP

(Means of Verification: Questionnaire)

Verification Result: Achieved

This is an indicator to evaluate the quality of training for PNGFA officers. Three regional trainings were implemented from September 2023 to March 2024 as described in the activity 1-5.

During the trainings, the project distributed questionnaire including 12 questions to 72 participants and all participants answered to the questions. The evaluation method involved a five-level assessment of (1) understanding of PMCP, (2) understanding of LCoP, and (3) understanding of the field application of PMCP and LCoP, comparing their understanding before and after the training.

According to the results, 62 out of 72 trainees (86.1%) improved their understanding of PMCP and LCoP. The detail of the method is described below.

Evaluation method for the indicator 1-1

The training was evaluated based on the following 3 questions in the questionnaire. They are evaluated on a 5-grading scale (1: Excellent, 2: Very Good, 3: Good, 4: Poor, 5: Very Poor)

Table 8-1. Questions related to evaluate the training based on the indicator 1-1

Q1. Your understanding of PMCP and revised LCoP before attending this training

- a) How well did you understand **PMCP before** attending the training? (Grade: __)
- b) How well did you understand **revised LCoP before** attending the training? (Grade: __)
- c) How well did you understand for applying revised LCoP and PMCP in **field monitoring before** attending this training? (Grade: __)

Q2. Your understanding of PMCP and revised LCoP after attending this training

- a) How well do you understand **PMCP after** attending the training? (Grade: __)
- b) How well do you understand **revised LCoP after** attending the training? (Grade: __)
- c) How well do you understand for applying revised LCoP and PMCP in **field monitoring after** attending this training? (Grade: __)

Q3. Learning about PMCP, revised LCoP

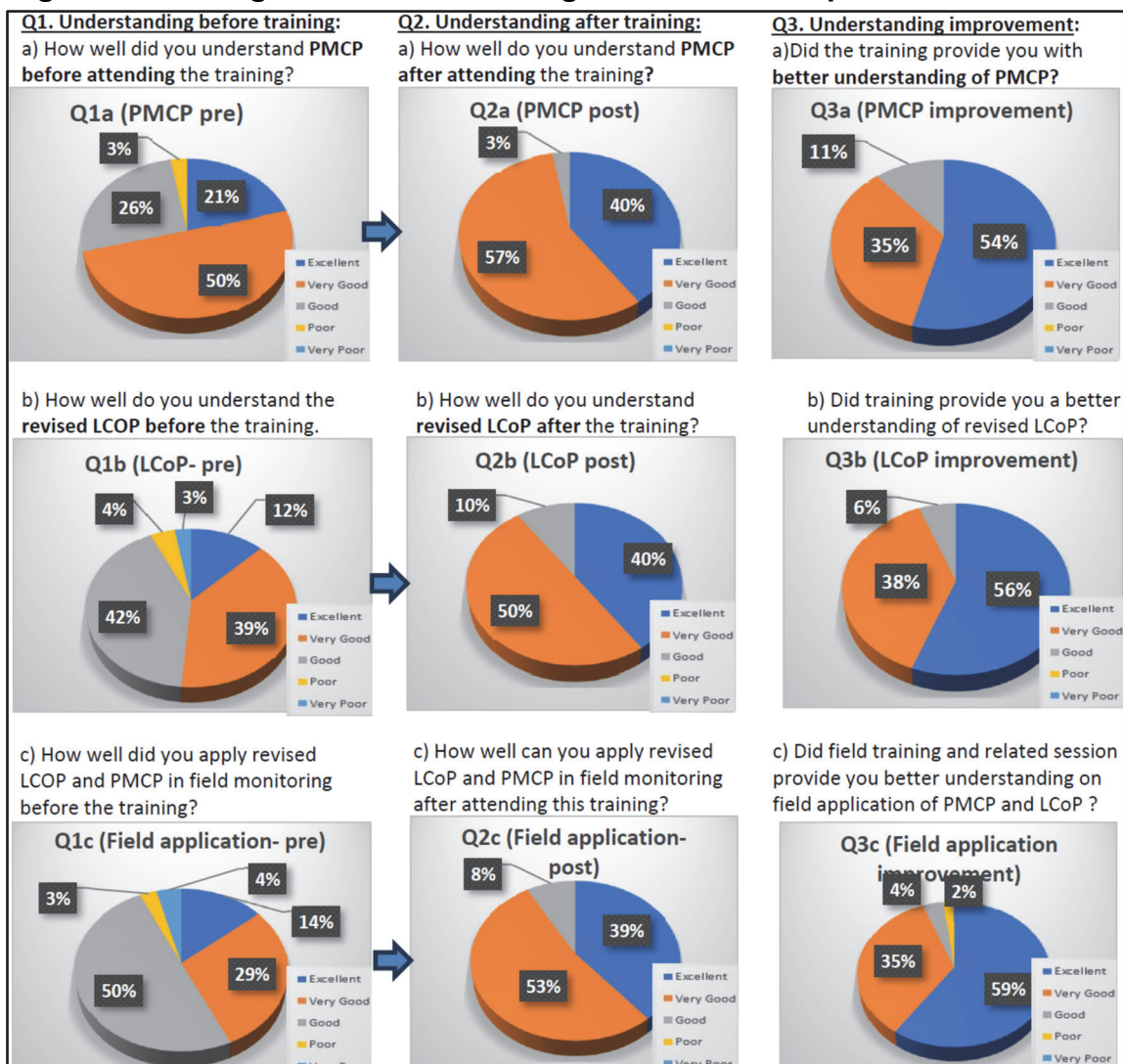
- a) Did the training provide you with a good understanding of PMCP? (Grade: __)
- b) Did the training provide you a good understanding of revised LCoP? (Grade: __)
- c) Did the field training and related sessions provide you a better understanding of the application

Q1 and Q2 are used to evaluate the improvement of trainees understanding of 1) PMCP, 2) revised LCoP, and 3) Field application on PMCP and revised LCoP.

In detailed analysis, 33 out of 72 trainees (46%) indicated improvement across all three items, while 16 trainees (22%) indicated improvement in two out of three questions, 13 trainees (18%) indicated improvement in one out of three questions, and 10 trainees (14%) reported no change in their understanding compared to before the training. Based on these results, it is estimated that 62 out of 72 trainees (86.1%) improved their understanding of PMCP and LCoP. This result meets the requirement (80%) of Indicator 1.1.

The figure below shows the “Grading result of the training based on the 3 questions”.

Figure 4. Grading result of the training based on the 3 questions



The table 8-2 shows the “Analysis of grading results”. These results also show that the training improved the capacity of PNGFA officers in addition to the indicator analysis.

Table 8-2. Analysis of grading results

Comparing Q1-a (understanding before training) with Q2-a (PMCP understanding after training), the percentage of “Excellent” increased from 21% to 40% and the total percentage of “Excellent” and “Very Good” increased from 71% to 97%.

Comparing Q1-b (Understanding of the revised LCoP before training) with Q2-b (Understanding of the revised LCoP after training), the proportion of “Excellent” increased from 12% to 40% and the total proportion of “Excellent” and “Very Good” increased from 51% to 97%.

Comparing Q1-c (Field application of PMCP and LCoP before training) and Q2-c (Field application of PMCP and LCoP after training), the percentage of “Excellent” increased from 14% to 39% and the total percentage of “Excellent” and “Very Good” increased from 43% to 94%.

The results of the grading to the questions show that the layers of “Excellent” and “Very Good” related to PMCP and LCoP understanding (Average of Q1, Q2 and Q3) have increased from 55 % to 94 %, which indicate that the capacity of these trainees improved as a result of the training. This result can lead to the improved monitoring capacity of field staff of PNGFA.

In addition, the training was targeted at all field staff responsible for monitoring, and it is recognized that capacity building has been achieved at a national level.

Indicator 1-2 Not lower than 80% of timber company foresters, who received the training, improves understanding of PMCP and LCoP

(Means of Verification: Questionnaire)

Verification Result: Achieved

This is an indicator to evaluate the quality of training for employees from forest industry stipulated in the Project Activity 1-6. Three regional trainings were implemented from September 2024 to November 2024 as described in the Activity 1-6.

During the trainings, the organizers distributed a questionnaire containing 14 questions to all 39 participants, and 38 participants submitted completed questionnaire.

According to the results, 34 out of 38 trainees (89.4%) improved their understanding of PMCP and LCoP. The detail of the method is described below.

In addition to this result, the responses from trainees are very positive regarding the quality of training such as contents, trainers, and training materials. The detail analysis is described in the reports described in Activity 1-6.

Evaluation method for the indicator 1-2

The training was evaluated based on the following 14 questions in the questionnaire.

Q1 to Q13 are evaluated on a 5-grading scale (1: Excellent, 2: Very Good, 3: Good, 4: Poor, 5: Very Poor), while Q14 requires descriptive answers for suggestions and comments

14 questions in a questionnaire

Q1: Understanding improvement of PMCP

Q2: Understanding improvement of revised LCoP

Q3: Improvement of Field application of PMCP and LCoP

Q4: Understanding improvement of GPS
 Q5: Understanding improvement of QField
 Q6: Understanding improvement of GIS
 Q7: Effectiveness (PMCP, LCoP, GIS, GPS, QField, Field training, Group work, Overall)
 Q8-13: Q8 (Duration), Q9 (Trainers), Q10 (Material), Q11 (Knowledge sharing),
 Q12 (Organizer), Q13 (Facilities)
 Q14: Suggestions or comments

Q1, Q2 and Q3 above were used to evaluate trainees' understanding and application of PMCP and LCoP. The three questions were designed to compare trainees' understanding of the three training contents before and after the sessions. The contents are 1) PMCP, 2) LCoP, and 3) Field application of PMCP and LCoP

In detailed analysis, 22 out of 38 trainees (58%) indicated improvement across all three questions (Q1, Q2, and Q3), while 7 trainees (18%) indicated improvement in two out of three questions, 5 trainees (13%) indicated improvement in one out of three questions, and 4 trainees (11%) reported no change in their understanding compared to before the training. Based on these results, it is estimated that 34 out of 38 trainees (89.4%) improved their understanding of PMCP and LCoP. This result meets the requirement (80%) of Indicator 1.2.

Indicator1-3 Documents on complying with PMCP and LCoP are developed and disseminated to project stakeholders.

(Means of Verification: Document on the programs and materials)

Verification Result: Achieved

Dissemination documents

The project conducted training sessions to disseminate PMCP/LCoP to stakeholders, including PNGFA officers and forest industry, and training materials were developed.

Long-term experts prepared the following documents for training implementation, (1) training programs, (2) training materials, (3) the logistic book, and (4) training reports to implement the training sessions. The training materials for forest industry received an average rating of 1.42 on a five-grade scale from the trainees, indicating high evaluation. These materials will continue to be used in the training sessions planned in 2025 collaborating with EF after the completion of JICA-PNGFA project.

The short-term experts developed dissemination materials to enhance compliance with PMCP and LCoP using technical tools. These materials include (1) GIS Data Sharing between PNGFA and Logging Companies, (2) Qfield Manual, and (3) QGIS Manual, used in training sessions for the forest industry. Additionally, other materials such as drones use and a Deforestation Alert System, which were trials used in pilot sites, were also included. The details of technical development and its trials is described in Activity 1.4.

Dissemination to stakeholders

The project carried out dissemination activities to enhance compliance with PMCP

and LCoP as follows:

- Conducted three training sessions for PNGFA officers as described in Activity 1-5.
- Conducted three training sessions for forest industry staff as described in Activity 1-6.
- Tested technical tools at pilot sites as described in Activity 1-4.
- Conducted workshops to disseminate the outlines of project results including PMCP/LCoP materials described in Activity 1-7

Output2 The ability of stakeholders (Government, Forest industry, Landowners, etc.) to effectively carry out natural regeneration practice is improved.

Indicator 2-1 User manual to manage natural regeneration is finalized.

(Means of Verification: Document on the training manual)

Verification Result: Achieved

The project organized the workshop to finalize the user manual with key PNGFA technical officers and JICA team on March 2025. The finalization process are as follows.

Finalization process of the User Manual

As described in Activity 2-4, at the beginning of the manual development process, project members developed its concept together. Based on the concept, a first draft user manual was prepared, incorporating the experiences and information from project members and pilot sites. The concept was approved at 4th JCC meeting on April 2024. The first draft manual was presented at the mid-term workshop in April 2024, where feedback was gathered from participants.

As described in Activity 2-5, the first draft of the user manual was explained to stakeholders at the three pilot sites, and their input was obtained. Incorporating these inputs, along with results from the Marshall Lagoon pilot site, the second edition of the user manual was developed.

Subsequently, a workshop was held with key PNGFA technical officers and JICA to review and refine the text, leading to the finalization of the manual.

Indicator 2-2 Not lower than 80% of PNGFA officers and stakeholders, who receives the manual, improves their understanding of the manual's content.

(Means of Verification: Questionnaire)

Verification Result: Achieved

This is an indicator to evaluate the quality of the manual on natural regeneration by assessing the improvement of stakeholders' understanding of the manual's contents related to natural regeneration.

First edition of user manual was provided stakeholders in pilot sites from October 2024 to January 2025. **Second edition of user manual was provided at technical workshop** in March 2025. The questionnaire survey was conducted for the both provisions. The details are described in Activity 2-5.

According to the questionnaire results **at pilot sites, 9 out of 10 stakeholders**

(90%) improved their understanding of the contents of the first edition of user manual.

According to the questionnaire results **at technical workshop, 9 out of 11 key PNGFA officers (82%) improved their understanding** of the contents of the second edition of user manual.

The details of the evaluation method at pilot sites are described below. The method for evaluating the participants' understanding in the workshop is omitted here because the method is almost the same.

Evaluation method for the indicator 2-2 (Stakeholders at pilot sites)

The questionnaires were distributed to stakeholders at three pilot sites of the project: Marshal Lagoon (Central), Amanab Block 1-4 (West Sepik), and Open Bay (East New Britain) and PNGFA officers.

JICA experts conducted workshops at the three pilot sites to disseminate the manual and distributed questionnaire to evaluate Indicator 2.2. The questionnaire consisted of seven questions, of which the following five questions were related to Indicator 2.2:

5 questions in a questionnaire

- Q1: Understanding of preliminary survey for assisted natural regeneration
- Q2: Understanding of consensus building for assisted natural regeneration
- Q3: Understanding of planning for assisted natural regeneration
- Q4: Understanding of Implementation of assisted natural regeneration
- Q5: Usefulness of the content of the manual

The questions are evaluated on a 5-grading scale (1: Excellent, 2: Very Good, 3: Good, 4: Poor, 5: Very Poor).

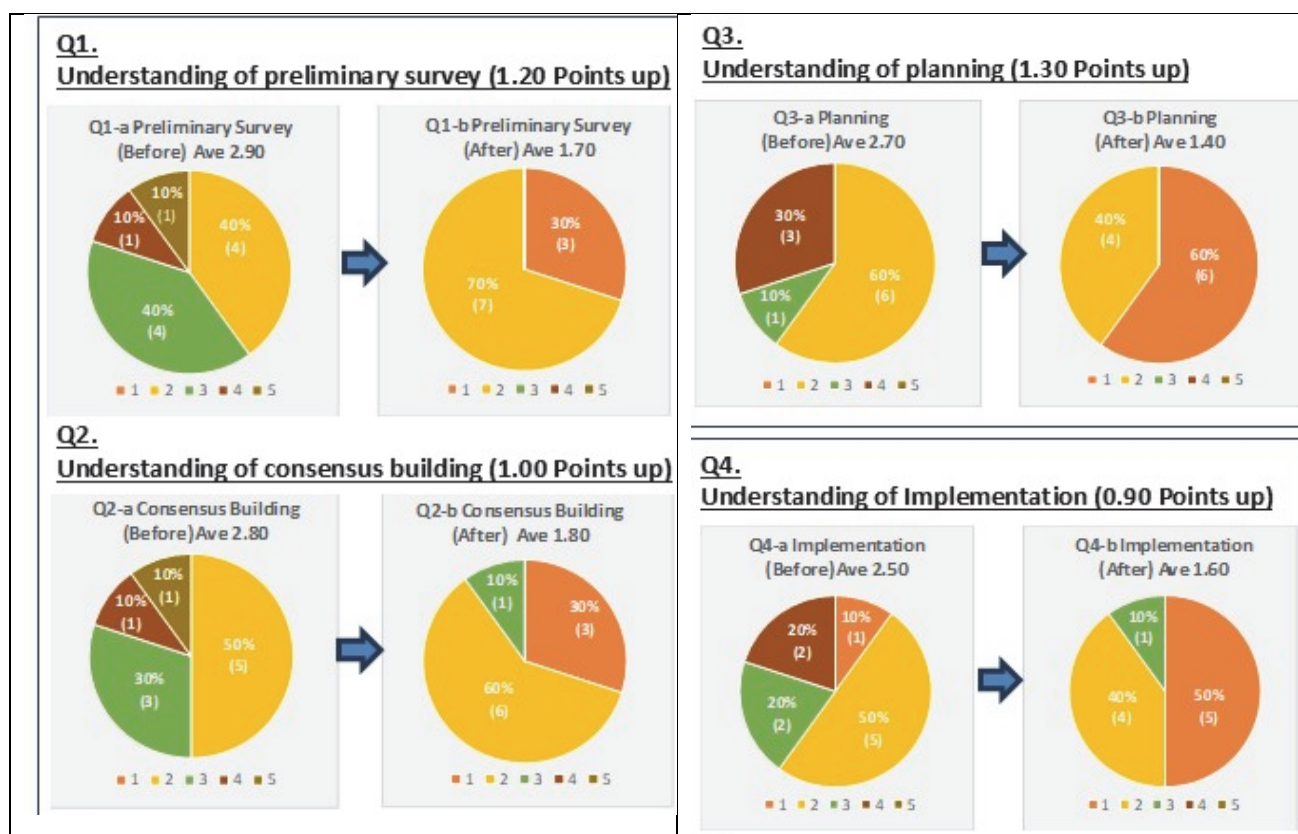
Q1 to Q4 were designed to evaluate stakeholders' understanding of the manual's content before and after the workshops. In the questionnaire, the level of understanding for each activity which is necessary for assisted natural regeneration (1. Preliminary survey, 2. Consensus building, 3. Planning, 4. Implementation) was evaluated.

In the detailed analysis, 6 out of 10 stakeholders (60%) indicated improvement across all four questions (Q1, Q2, Q3 and Q4), 3 stakeholders (30%) indicated improvement in three out of the four questions, while 1 stakeholder (10%) reported no change in understanding compared to before the workshop. Based on these results, it is estimated that 9 out of 10 stakeholders (90.0%) improved their understanding of the manual's content. This result meets the requirement (80%) of Indicator 2.2.

Additionally, based on the responses to Q5, 9 out of 10 stakeholders evaluated the manual as "Excellent" or "Very Good," this result indicates its usefulness.

The chart below shows the "Evaluation results for questions Q1 to Q4 from stakeholders".

Figure 5. Grading result of understanding of four manual contents at pilot sites



Output3 Field carbon monitoring procedures for logging operation are developed.

Indicator 3-1 Methods for monitoring, recording, reporting or reducing emission level from logging operation are developed.

(Means of Verification: Document on the methods)

Verification Result: Achieved

- The method to estimate the emission from logging operation was prepared and presented as described in the Activity 3-3. The document list is provided below.
- The method requires field survey for measuring emissions from felling, skid trails, roads, and log landings and it refers to internationally recognized standards such as VM0035.
- The method was trialed at two pilot sites, and reports were produced detailing the results of carbon monitoring.

Documents List for field carbon monitoring

1. Methods for carbon monitoring
 - i. Setup-scale methodology for trial monitoring of logging emissions in JICA-PNGFA project pilot concessions in Papua New Guinea (July 2024)
 - ii. Setup-scale Method for Field Carbon Monitoring of logging emission in PNG (February 2024)
2. Project Manual for carbon monitoring
 - i. Project Manual for **Field Logging Emission Measurements** (February 2025)
 - ii. Project Manual for **Field Logging Carbon Emission Calculation** (February 2025)
 - iii. Excel Carbon Calculation Spread Sheet (February 2025)
3. Trial & Validation Report at two pilot sites

- | |
|--|
| <ul style="list-style-type: none"> i. First Results of the Carbon Performance of Logging Operations in Papua New Guinea Using the Setup-Scale Method Developed for Trial Monitoring in Concession Sites of JICA-PNGFA Project (August 2024) ii. Report on Field Carbon Monitoring on Logging Operations at Open Bay, East New Britain Province (December 2024) |
|--|

Indicator 3-2 At least one training session for PNGFA field officers is organized to implement carbon monitoring.

(Means of Verification: Document on the training program)

Verification Result: Achieved

The main training content was developed in July 2024, and two training sessions for both theory and field survey were conducted at the same month. Further other three training sessions, total number of five training sessions were conducted as described in the Activity 3-4.

- A total of five training sessions were conducted, significantly exceeding the initial target of one session.
- The first training session was developed and delivered in July 2024, covering both theoretical knowledge and practical field survey techniques.
- Training sessions included hands-on field monitoring, data recording, and emissions calculation for PNGFA field officers.

- | |
|--|
| <ol style="list-style-type: none"> 1. <u>First Training Session (July 8–9, 2024)</u>: Conducted by Mr. Salim (21 PNGFA officers)
<u>Content</u>: Developed methods and field carbon monitoring survey 2. <u>Second Training Session (July 14–18, 2024)</u>: Conducted by Mr. Salim (6 PNGFA officers)
<u>Content</u>: On-site practical application at Marshall Lagoon Unu Amau FMA 3. <u>Third Training Session (November 25–27, 2024)</u>: Conducted Mr. Kato (4 PNGFA officers)
<u>Content</u>: On-site practical application at Open Bay. 4. <u>Fourth Training Session (December 5, 2024)</u>: Conducted by Mr. Kato (25 PNGFA officers)
<u>Content</u>: (1) Updated field carbon monitoring survey, (2) Calculation methods for emissions from logging operations, (3) Results of the Mashall Lagoon & Unu Amau 5. <u>Fifth Training Session (February 18–21, 2025)</u>: Conducted Mr. Kato (20 PNGFA officers) collaboration with EF.
<u>Content</u>: (1) Manual (Field carbon monitoring survey), (2) Manual (Carbon emission), (3) Result of field carbon monitoring at Open Bay (4) Discussion of recommendation on promoting field carbon monitoring. |
|--|

Indicator 3-3 Measures to promote the low emission logging are proposed.

(Means of Verification: Document on the suggestion)

Verification Result: Achieved

The project proposed a measure to promote low-emission logging, focusing on assessment of logging impact using developed method described in Activity 3-5.

A short-term expert made a document “Evaluate the performance of logging

concessions through monitoring of carbon emission levels in operational sites - Proposition of elements for future complementary program of actions” and presented it to PNGFA in August 2024

The proposal to promote low-emission logging is, given the situation, there is no specific forest carbon monitoring from logging in PNG, it should be crucial to assess the logging impact from view point of carbon emissions using the forest carbon monitoring method developed by project at 3 Phases (Set-up Level, Concession Level, Province Level) to apply the method for broader scale.

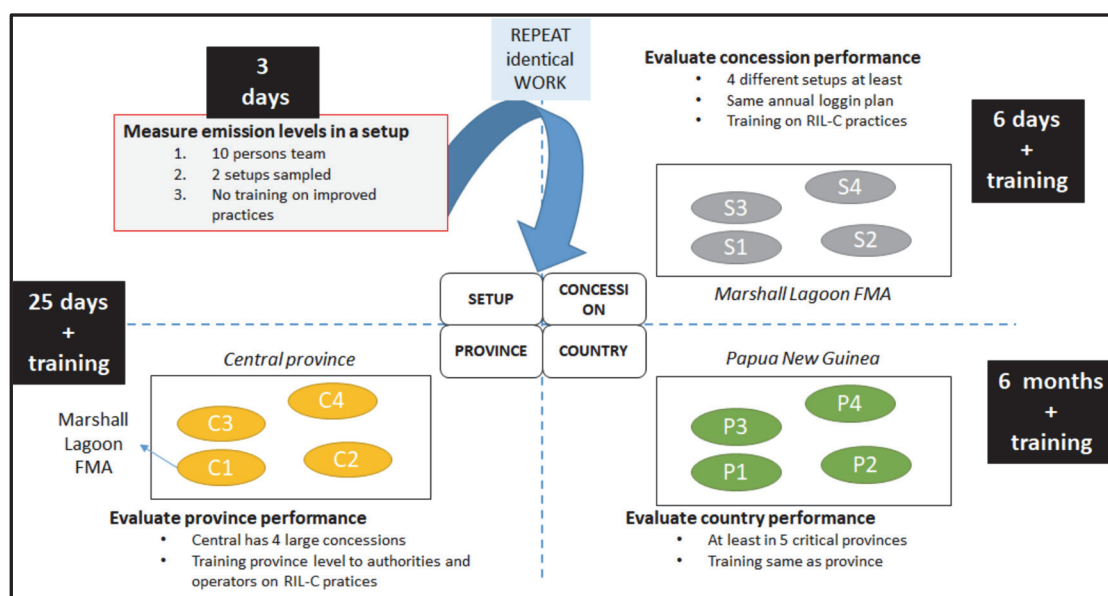


Fig 6. Approach for Scaling Up Carbon Monitoring

Expected Outputs	Activities
➤ Output 1: Draft methodology	First draft
	Test application in a field trial monitoring
	Support an additional trial monitoring
	Assistance to future initiatives/programmes
➤ Output 2: select priority practices and provide training	Training on "RIL-C" practices
	Identify priority RIL-C practices in workshop
	Provide training
	Determine monitoring parameters
➤ Output 3: field trial monitoring	Measure emission levels
	Collect setup-scale information (data, maps)
	Produce historical data (concession-scale)
	Calculate baseline emissions
	Estimate emissions after support/training
	Measure emissions after support/training
	Conclude on emission reductions
	Disseminate results

Figure 7. Idea for Scaling-up for Carbon Monitoring Outputs

Indicator 3-4 Measures to reduce emissions from logging operations are proposed.

(Means of Verification: Document on the proposal)

Verification Result: Achieved

The project developed proposals for forest carbon monitoring and emission reductions from logging operations. These proposals aim to promote low-emission logging practices and facilitate access future carbon finance for contributing to climate change mitigation.

The measures are described in the Activity 3-6.

2-2 Project Purpose and indicators (Target Values and actual values achieved at completion)

We evaluate the following **five indicators** based on the outcomes from the project.

Project Purpose The capacity of stakeholders for enforcement of rules and procedures on logging operations and natural regeneration activities are strengthened for reducing forest degradation and promoting low emission logging.

Indicator 1 In PNGFA headquarters and pilot sites provincial offices, total 5 PNGFA staff capable of disseminating PMCP, LCoP and natural regeneration are trained.

(Means of Verification: Questionnaire)

Verification Result: Achieved

- **PMCP/LCoP dissemination:** The number of PNGFA officers, who can disseminate PMCP and LCoP, **increased from 29 officers (40%) before the training to 64 officers (90%) as the result of the training workshops** described in the Activity 1-5.
- **Natural Regeneration dissemination:** The number of PNGFA officers, who can disseminate natural regeneration, **increased from 1 officer before the project implementation to 5 officers as the result of the involvement for pilot activities of assisted natural regeneration at three pilot sites** described in the Activity 2-3.

Evaluation method for the indicator 1 (PMCP & LCoP dissemination)

The evaluation was based on the questionnaire results from 72 PNGFA field officers who participated in the training workshops described in Activity 1-5. Specifically, the assessment considered three questions in the questionnaire:

1. Understanding of PMCP
2. Understanding of LCoP
3. Understanding of the practical application of PMCP and LCoP

Participants who rated all three aspects as either "Excellent" or "Very Good" were considered to have acquired the capability to disseminate PMCP and LCoP.

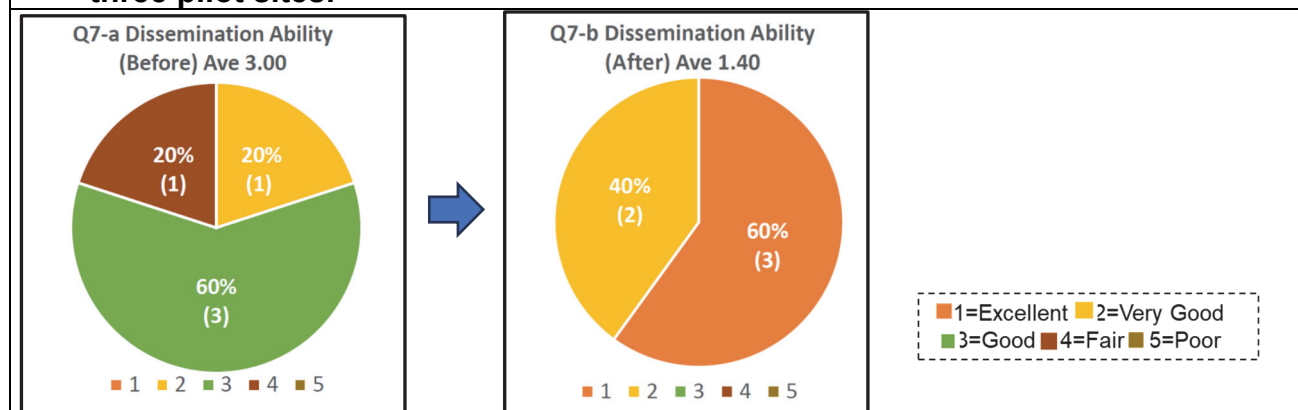
According to the questionnaire results described in Indicator 1-1, the number of such participants **increased from 29 officers (40%) before the training to 64 officers (90%)** after the training. Additionally, the number of participants who rated all three aspects as "Excellent" increased from 6 officers (8%) to 23 officers (32%), indicating that they were trained to the level of Trainers of Trainers (ToT).

The significant increase in these figures compared to the anticipated target is attributed to the fact that dissemination activities, which were initially planned at the pilot site level, were implemented on a nationwide scale.

In addition to field officers, the capacity of PNGFA HQ officers was also strengthened through implementation of PMCP and LCoP training workshops. Specifically, the Field Operation Directorate coordinated with field officers and logging companies to organize the training, conducted lectures, and facilitated workshops. The Forest Policy and Aid Coordination Branch collaborated with development partners to secure budgets and implement these workshops. The Mapping Branch conducted GIS and GPS training sessions for logging companies, while the Organization Development Branch prepared and managed internal PNGFA processes for the PNGFA officer training. These roles are critical for implementing dissemination activities.

Evaluation method for the indicator 1 (Natural Regeneration dissemination):

- **Means of verification:** Questionnaire
- **Date:** 6th March 2025
- **Venue:** Lamana Hotel (Technical Working Session to finalize User Manual of Assisted Natural Regeneration)
- **Specific Question in Questionnaire:** Q7. Capacity for dissemination of natural regeneration to stakeholders including Permit Holders and landowners before and after the pilot activity
- **Verified criterion:** Officers who **rated the question as either "Excellent" or "Very Good"** were assessed to have acquired the **capability to disseminate Natural Regeneration.**
- **Assumed Training type:** On-site training (Pilot activities at pilot sites)
- **Target PNFFA officer:** Following five (5) officers
 - ✓ HQ: one officer (Project Manager)
 - ✓ Marshall Lagoon & UnuAmau FMA: one officer
 - ✓ Amanab 1-4: two officers
 - ✓ Open Bay: one officer
- **Result:** The number of PNGFA officers, who can disseminate natural regeneration, **increased from 1 officer before the project implementation to 5 officers as the result of the involvement for pilot activities of assisted natural regeneration at three pilot sites.**



Indicator 2 Measures to promote natural regeneration are organized and recommended.

(Means of Verification: Recommendation)

Verification Result: Achieved

The recommendation was discussed at the technical workshop, "Finalizing the User Manual," held from March 4th to 6th at Lamana Hotel. Key PNGFA officers attended the workshop, and the recommendation was finalized for presentation at the final JCC meeting on March 26, 2025.

Recommendations

There are few cases of ANR project implementation in PNG, and the accumulation of technical information is limited. Given the limited implementation of ANR projects, PNGFA should identify key challenges to be addressed in the short, medium, and long term and adopt a phased approach to its expansion and dissemination.

1. Continuation and Expansion of Project Activities (Short-Term)

PNGFA should continue project activities and strengthen the foundation for ANR dissemination.

- Continue ANR activities at the three pilot sites.
- Utilize Marshall Lagoon & Unu Amau FMA (pilot site) as model cases for ANR activity.
- Encourage all NFM (Natural Forest Management) officers to use the user manual in their activities and conduct training as needed.
- Distribute the user manual to logging companies, support the ANR activities they implement, and provide training as needed.

2. Establishing a Foundation for ANR Expansion (Mid-Term)

PNGFA should promote the following initiatives to expand ANR dissemination:

- Strengthen the monitoring and evaluation of ANR activities in collaboration with the Forest Research Institute (FRI).
- Develop a dissemination strategy for ANR activities.
- Establish mechanism to enhance the involvement of logging companies and to encourage active participation from landowners.

3. Large-Scale Dissemination and Sustainable Implementation of ANR (Long-Term)

PNGFA should establish a sustainable dissemination framework to ensure the long-term adoption of ANR across PNG.

- Collect, analyze, and widely disseminate successful ANR case studies.
- Develop institutional frameworks to promote ANR and strengthen implementation

Indicator 3 Measures of low emission logging are organized and recommended.

(Means of Verification: Recommendation)

Verification Result: Achieved

In this project, we defined "low-emission logging" as emission reductions achieved through compliance with PMCP and LCoP, ensuring alignment with Reduced Impact Logging (RIL) principles.

Based on the definition, we have developed and the methodology to assess carbon emissions from logging operations, which are essential for the implementation of low-

emission logging. Additionally, we have strengthened PNGFA's carbon monitoring capacity to support the assessment of low-emission logging.

Through these activities, we have compiled the five recommendations outlined in Activity 3-6 and established both the methodologies necessary for implementing these recommendations and the framework required for assessing emissions from logging operations.

Indicator 4 In PNGFA headquarters and pilot sites provincial offices, total 5 PNGFA staff are trained as technical experts of forest carbon monitoring.

(Means of Verification: Questionnaire)

Verification Result: Partially Achieved

From July 2024 to February 2025, a series of training sessions on forest carbon monitoring were conducted, covering theoretical knowledge, field implementation, and carbon emission calculations.

The questionnaire survey was conducted during the carbon monitoring workshop held on February 2025. As a result, **three PNGFA officers were recognized as technical experts** based on their participation in training components and fulfilling following criteria.

The evaluation method of technical experts of forest carbon monitoring

- **Selection Criteria: Fulfil following three categories**
 - (1) Experience in Field Monitoring Survey
 - (2) Attend the Carbon Monitoring Workshop (February 18-20, 2025)
 - (3) Acquisition of technical contents at workshop (Questionnaire response)
- **Technical Contents of technical experts: Evaluated by questionnaire**
 - (1) Field Carbon Monitoring Method
 - (2) Field Monitoring Survey
 - (3) Carbon Calculation
- **Verified Criteria for technical contents:** Self-assessment to questionnaire
Participants who **rated all three aspects as either "Excellent" or "Very Good"**
- **Result:**
 - (1) Six officers fulfilled Criteria (1) and Criteria (2)
 - (2) Three among six officers verified as technical experts
 - Three officers obtained 3 technical contents
 - Two officers obtained 2 technical contents (Not acquired calculation)
 - One officer obtained 1 technical content (Not acquired method & calculation)
- **Analysis:** Field Monitoring Survey is well understood but Carbon Calculation is not sufficiently understood.

Indicator 5 Good logging activities based on PMCP and LCoP are shared as best practices.

(Means of Verification: Relevant documents)

Verification Result: Achieved

The project collaborated with two FSC-certified companies that are implementing

high-quality logging operations in PNG and carried out the following activities in the box to share their practices. Through these activities, the best practices based on PMCP and LCoP in PNG were shared with stakeholders.

These results and other materials for better logging operations are summarized in documents listed in the section of “Indicator1-3 Documents on complying with PMCP and LCoP are developed and disseminated to project stakeholders”.

Related activity 1: Training collaborating with SBLC

- As part of the project, **two out of six training sessions were conducted at the operational site of Settin Bay Lumber Company**, a company certified by FSC (Forest Stewardship Council).
- The company is one of only two FSC-certified logging companies in PNG, the certificated logging operation is the evidence of good practice.
- Through this, best practices in **sustainable logging were shared with training participants**.

Related activity 2: Advanced monitoring at Open Bay

- The project collaborated with Open Bay Timber, the other FSC-certified company in PNG, to implement advanced monitoring using drones and GIS technology.
- This activity facilitated the **sharing of advanced logging monitoring practices among relevant stakeholders**.

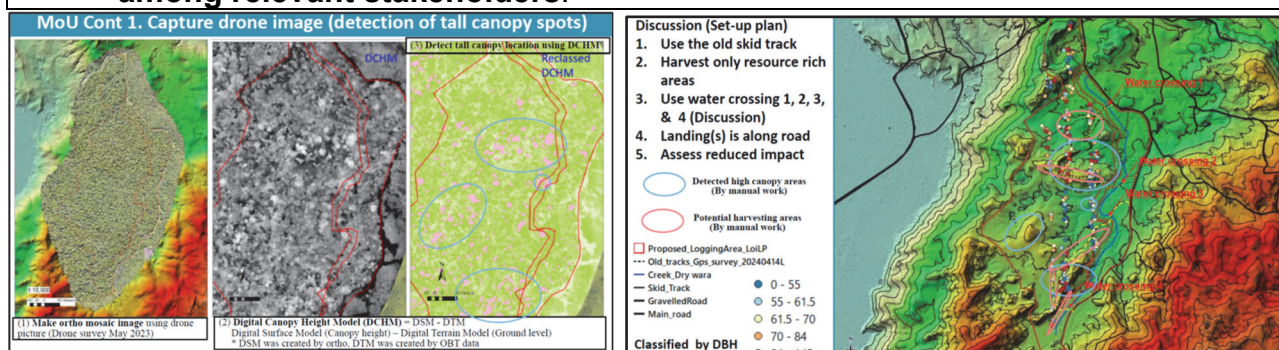


Figure 8: Advanced logging monitoring in Open Bay using GPS, GIS, and drone.

3 History of PDM Modification

Due to the impact of the COVID-19 pandemic, the formulation of this project involved a two-step survey process before the PDM was finalized.

First, a preliminary survey was conducted using web conferences in 2021, followed by a detailed planning survey after the project implementation in 2022.

● Version 1 (Developed by preliminary survey, December 2021)

At the beginning of the project, PDM Version 1, which had been developed based on the preliminary survey, was prepared.

● Version 1.1 (After completion of detailed planning survey, December 2022)

The detailed planning survey, including the finalization of the PDM, was led by long-term experts in consultation with JICA HQ, the JICA PNG Office, short-term experts, and PNGFA. Following these consultations, a revised draft PDM (Version 1.1) was presented and approved at the 2nd JCC meeting in October 2022. The revised PDM (Version 1.1)

was finalized after the R/D was signed by both parties in December 2022.

- **Version 2 (Suggestion from JICA HQ monitoring mission, September 2023)**

A JICA HQ monitoring mission was dispatched in August 2023, and the mission team presented its findings and recommendations at the wrap-up meeting on August 28. The recommendations included modifying Activity 3-5 in the PDM.

Following the meeting, PNGFA and the JICA team discussed the proposed changes and agreed to modify Activity 3-5 in the PDM. The update from Version 1.1 to Version 2 was completed through the 2nd Monitoring Sheet in September 2023.

- **Version 3 (Change of indicator, September 2023)**

At the 4th JCC meeting in March 2024, a modification of indicator 3-3, related to the previously revised Activity 3-5, was proposed by a JICA long-term expert and approved.

4 Others

4-1 Result of Environmental and Social Considerations

LCoP serves as practical guidance for both logging operations (companies) and logging monitoring (PNGFA) under the concept of Reduced Impact Logging. The dissemination of LCoP contributed to reducing the environmental impact of logging.

For the implementation of pilot activities on natural regeneration, we selected target species from the dominant species in each area, which contribute to biodiversity conservation. The project worked together with landowners and logging companies, taking their customs and local conditions into account when determining roles, including the establishment of community nurseries, seedling production and tree planting.

4-2 Result of Considerations on Gender / Peace Building / Poverty Reduction, Disability, Disease infection, Social System, Human Wellbeing, Human Right, and Gender Equality (if applicable)

Gender Considerations

The project promoted women's participation through PMCP and LCoP training sessions. Among the 78 PNGFA staff who participated, 10 were women, while among the 38 logging company staff, 12 were women. To further encourage female participation in those training sessions, special arrangements were made for accommodations.

Additionally, two female managers within PNGFA were actively involved in the project. One was responsible for carbon monitoring, while the other served as the liaison with Expertise France. In addition to their primary responsibilities, they actively contributed to advancing the project's activities through various efforts. By supporting their work through this project, their technical skill was further strengthened, contributing to their professional development.

The JICA team employed a female national staff member. Through her involvement in the project, she gained experience in international cooperation projects and the forestry sector,

enhancing her professional skills.

The natural regeneration pilot activities in the Marshall Lagoon & Unu Amau areas also promoted women's engagement. The activities were conducted in collaboration with a female planner from the First Mark Limited, who played a central role in various initiatives, further enhancing her skills.

Moreover, the project actively encouraged female participation in community-based dissemination activities. In Binudi clan, 17 people attended, with 8 women participating, while in Libini clan, 15 people attended, including 6 women. These activities successfully promoted women's involvement in natural regeneration initiatives within their respective communities.

Poverty Reduction Considerations

This project contributes to poverty reduction by supporting the sustainable logging operation, which is a key economic sector in rural Papua New Guinea. Sustainable logging activities promote rural development—such as the construction of schools, hospitals, and roads through logging revenues—as well as contribute to job creation, benefiting local communities.

III. Results of Joint Review

1. Results of Review based on DAC Evaluation Criteria

1-1. Relevance of the Project: High

The relevance of this project is evaluated as “high” based on the following reasons.

In PNG, the sustainable natural resource utilization is explicitly stated in the Constitution, development plans, the National Forest Policy, and the Forestry Act. Forests cover 78% of the country’s land area, and commercial logging operations have been conducted, which plays a crucial role in economic growth and regional development by contributing to national revenue, creating local employment opportunities, generating income for local people from timbers, and supporting infrastructure development such as roads and schools. This project supported sustainable forest management efforts through the strengthening of compliance PMCP and LCoP, which are key guidelines for sustainable logging operation under the Forestry Act.

However, PNG’s GHG emissions in 2015 increased by approximately 29 million tons of CO₂ compared to 2000, with around 80% (approximately 23 million tons of CO₂) resulting from commercial logging and agricultural land use. So

However, forestry sector plays key role for addressing climate change issues for PNG. As of 2015, greenhouse gas (GHG) emissions had increased by approximately 29 million tons of CO₂ compared to the year 2000, with about 80% of this increase—equivalent to 23 million tons of CO₂—originating from commercial logging and other forestry-related emissions (PNG’s Enhanced Nationally Determined Contribution 2020). In response, the PNG government has positioned the promotion of REDD+ as a key policy and is actively working to strengthen forest management and reduce emissions. This project contributed to the promotion of low-emission logging through strengthened compliance with the LCoP while also developing carbon monitoring methodology for logging operations thus supported the establishment of a foundation for emission reductions in the commercial logging sector.

Additionally, the REDD+ Result-Based Payment (RBP) project submitted by the PNG government to the Green Climate Fund (GCF) in 2018 was approved by the GCF Board meeting in November 2024. Moving forward, PNG’s REDD+ initiatives are expected to enter the implementation phase after completing the necessary procedures. This project has contributed to the establishment of a foundation for emission reductions in commercial logging and aligns with the efforts of the GCF’s RBP implementation.

In conclusion, this project has supported the strengthening of regulatory compliance necessary for the promotion of sustainable logging operations, as well as the development of a carbon monitoring methods for logging activities as part of PNG’s forest degradation countermeasures. Furthermore, those results will contribute to the future implementation of

GCF RBP. From both the perspectives of forest management and climate change mitigation in PNG, the relevance of this project is considered high.

1-2. Coherence of the Project: High

The coherence of this project is evaluated as "high" based on its alignment with the policy directions of the Government of Japan and JICA, as well as its collaborative relationship with other development partners.

(i) Collaboration with Other JICA Projects

This project aligns with one of the three priority areas in Japan's ODA Policy for the Independent State of Papua New Guinea, issued by the Government of Japan, under the priority area of "Environment and Climate Change", which includes environmental conservation, reduction of environmental damage, and climate change mitigation. In addition, the promotion of sustainable forest management contributes to achieve the Cluster "Sustainable Terrestrial Natural Resource Management" under JICA's Global Agenda for "Nature Conservation."

Although this project does not have direct collaboration with other JICA projects, it builds upon and further develops the outcomes of previous one grant aid and two technical cooperation projects, which includes development of the national forest base and the PNG Forest Information Management System (PNG-FRIMS), implemented from 2010 to 2019. It maintains harmony with past JICA support while promoting continuous development, demonstrating a high level of coherence with JICA's development cooperation strategy.

(ii) Collaboration with Other Development Assistance Projects

This project has contributed to climate change mitigation efforts and sustainable forest management by collaborating with other international cooperation projects, specifically the EU-FCCB (EU Forestry, Climate Change and Biodiversity Program) and PNGSL (USAID PNG Sustainable Landscape Program).

The EU-FCCB is a large-scale EU-funded program on forestry, climate change, and biodiversity, with a budget of €55 million. This project collaborated with Expertise France (EF), one of the implementing agencies of EU-FCCB, to expand:

- PMCP and LCoP training for the forest industry
- Field carbon monitoring
- Assisted natural regeneration activities

EU-FCCB will build upon the outcomes of the JICA-PNGFA Project after its completion, further contributing to sustainable forest management and climate change mitigation.

Additionally, the USAID PNGSL program is designed to promote sustainable forest management and climate change mitigation. In Madang Province, the pilot province under PNGSL, this project collaborated to expand training programs to enhance compliance with PMCP/LCoP, thereby contributing to sustainable forest management in the province.

(iii) Consistency with global Frameworks

This project aligns with international frameworks for forestry and climate change mitigation, including the SDGs, REDD+, and GCF.

In terms of the Sustainable Development Goals (SDGs), this project contributed to SDG 13 (Climate Action) by contribution to climate change mitigation and SDG 15 (Life on Land) by promoting sustainable forest management.

Furthermore, this project supported the improvement of logging operations, which will be one of key measures for implementing PNG's REDD+ Results-Based Payment (RBP) program. As a result, it is expected to contribute to the future implementation of REDD+ RBP in PNG.

1-3. Effectiveness of the Project: High

This project purpose is “capacity of stakeholders for enforcement of rules and procedures on logging operations and natural regeneration activities are strengthened for reducing forest degradation and promoting low emission logging”.

The evaluation was conducted based on five indicators set in the PDM, with four indicators fully achieved and one partially achieved, as detailed below. In addition, the achievements were clearly caused by the produced outputs of the project.

The effectiveness of the project is evaluated as high. The evaluation result of project achievement using project indicators are described as following.

Evaluation result of project achievement using project indicators

- **Indicator 1: Dissemination capacity for PMCP, LCoP, and natural regeneration (Achieved):** Through training, the number of PNGFA officers capable of disseminating PMCP and LCoP increased from 29 officers to 64 officers, expanding dissemination nationwide from pilot site level. Through pilot activity of natural regeneration, 5 PNGFA officers were assessed as capable of disseminating natural regeneration.
- **Indicator 2: Organization and recommendation of measures to promote natural regeneration (Achieved):** Based on the project activities and outcomes, project members compiled recommendations for promoting natural regeneration. The recommendations followed a phased approach (short-term, mid-term, and long-term) and were approved at the JCC.
- **Indicator 3: Organization and recommendation of measures for low-emission logging (Achieved):** The concept of low-emission logging was defined based on RIL principles, and a carbon monitoring methodology was developed. PNGFA's carbon monitoring capacity was also enhanced. Based on these achievements, recommendations were compiled with stakeholders and approved at the JCC.
- **Indicator 4: Training of PNGFA officers as technical experts in forest carbon monitoring (Partially Achieved):** Three technical experts were trained (target: five) to conduct forest carbon monitoring. The forest carbon monitoring needs 3 technical understanding; (1) Method, (2) Field Survey, (3) Calculation, the most target officers

understand method and field survey, however calculation need more dissemination.

- **Indicator 5: Dissemination of proper logging practices based on PMCP and LCoP (Achieved):** Best practices for sustainable logging were shared with stakeholders through collaboration with FSC-certified two companies. The logging practices were shared at training and project workshops.

1-4. Efficiency of the Project: High

The project was implemented efficiently, ensuring timely and appropriate inputs that directly contributed to the achievement of outputs. Despite some fluctuations in project costs and minor delays, the project period was effectively managed, and key activities were completed within the original three-year framework. Collaboration with other development partners and PNGFA's active involvement further enhanced the efficiency of resource utilization.

Therefore, the efficiency of the project is evaluated as high.

The project cost, project period, and the causal relationship between inputs and outputs in the evaluation of efficiency are as follows

(i) Project Cost

Planned cost: 335 million JPY

Actual cost: 363 million JPY (108 % comparing to planned cost)

The actual project cost increased 108 % compared to the planned costs due to exchange rate fluctuations, particularly the rapid yen depreciation from start of project (April 2022) to the implementation period in 2023 and 2024, leading to higher costs in JPY.

Additionally, the expansion of PMCP and LCoP training from the pilot-site level to the national level further increased costs. To address the increased costs, training workshops for PNGFA were co-funded by JICA and PNGFA (approximately 670,000 PGK in total).

For training targeted at logging companies, the project collaborated with EF and USAID, covering 445,000 PGK out of a total cost of 578,000 PGK through other them.

These efforts enabled the dissemination of PMCP and LCoP to more stakeholders than initially planned.

(ii) Project Period

Planned period: 3 years

Actual period: 3 years (without extension)

Although additional preparatory work was required for the two-step evaluation before the full-scale implementation phase due to COVID-19 at the start of the project, the planned outcomes were successfully achieved within the original project period.

(iii) Causal Relationship Between Inputs and Outputs

The inputs provided by both the Japanese and PNG sides were appropriate in both quantity and quality, ensuring the outputs production within the project period.

From the JICA side, two long-term experts and seven short-term experts were deployed. The coordinated dispatch of short-term experts allowed them to work closely with the long-

term experts and PNGFA, facilitating more effective implementation of activities and enhancing the quality of project outputs.

On the PNGFA side, four counterpart personnel were officially assigned and played a crucial role in implementing project activities, coordinating efforts, and conducting technical discussions. Their deep involvement ensured the smooth execution of the project and was essential in the successful development of project outputs.

Additionally, many officers from the Field Operation Directorate (including Provincial Forest Offices) and the Policy and Planning Directorate actively participated in project activities, making significant contributions to the production of project outputs. Furthermore, personnel from the Forest Research Institute, Organization Development Branch, Reforestation and Afforestation Directorate, and Acquisition and Allocation Directorate also contributed to the development of project outputs.

1-5. Impact of the Project: High

The impact of the project was evaluated from two perspectives: (i) Prospects to achieve the Overall Goal and (ii) Causal Relationship (between Overall Goal and Project Purpose), and was assessed as high for the following reasons.

(i) Prospects to achieve the Overall Goal

Overall Goal:

Forests in PNG are conserved, managed in a sustainable manner and, at the same time, its conservation is promoted as an important measure against climate change.

Indicators for the Overall Goal:

1. The revised PMCP and LCoP are disseminated in the major logging companies operating in PNG.
2. The technological contents developed by the project such as natural regeneration and carbon monitoring are reflected in the sustainable forest management activities in PNG.
3. At least 10 PNGFA staff acquire forest carbon monitoring techniques nationwide.
4. Carbon monitoring data, especially wood removal data, collected through the field carbon monitoring procedures developed by this project is used for national reporting on Climate Change.

The project outcomes at the period of project completion regarding the overall goal indicators as follows.

- **Indicator 1:** A framework for the nationwide dissemination of PMCP and LCoP was established, and three out of seven planned regional training sessions were conducted.
- **Indicator 2:** The project developed the User Manual on Natural Regeneration and the Carbon Monitoring Methods from logging operation.
- **Indicator 3:** A series of training sessions on field carbon monitoring was conducted for PNGFA. As a result, seven PNGFA officers were trained as technical experts in carbon monitoring.

- **Indicator 4:** The field carbon monitoring method was developed, and actual monitoring was conducted at two pilot sites, and estimated emission from logging operation.

(ii) Causal Relationship (between Overall Goal and Project Purpose)

Project Purpose:

“To strengthen compliance with logging regulations and natural regeneration activities for reducing forest degradation and promoting low-emission logging.”

The core activity of forest management in PNG is the logging. Therefore, the dissemination and compliance with PMCP and LCoP are essential for achieving sustainable forest management. Since their establishment in the 1990s, this project marked the first effort to promote compliance to logging companies, creating a significant impact. Moving forward, the nationwide dissemination is planned in collaboration with EF and is expected to contribute to achieving the overall goal of sustainable forest management.

In PNG, selective logging in natural forests has diminished commercial tree species. To ensure sustainable resource use, recovering the commercial tree species after logging is essential. The project carried out assisted natural regeneration activities, including the planting of commercial tree species following selective logging at 3 pilot sites. Furthermore, the user manual was developed to support the promotion of these activities. These activities are expected to increase the volume of commercial tree species in forests, promote the sustainable resources management, and reduce logging pressure on primary forests. However, the impact of this initiative will take time to materialize, as it takes 50 to 100 years for the planted trees to grow well for harvesting.

The carbon monitoring method developed in this project has made it possible to estimate emissions from logging operations by emission source (hauling, skidding, felling). By utilizing this method and accumulating data, it becomes possible to more precisely assess the impact of logging, one of the major sources of emissions in PNG. This will, in turn, contribute to promoting climate change mitigation measures in the forestry sector, including emission reductions from logging through the enforcement of PMCP and LCoP.

1-6. Sustainability of the Project: High

The sustainability of this project is assessed as high, considering its alignment with national policies, strong institutional and technical foundations, and financial aspects.

(i) Policy and System

The sustainable logging practices and carbon monitoring promoted by this project align with PNG's policies and institutional frameworks as key measures for sustainable forest management and climate change mitigation, and their continuation is expected.

The constitution and forest policies explicitly support the sustainable use of natural resources, while the Forestry Act, PMCP, and LCoP function as regulatory frameworks ensuring sustainable logging. Additionally, while logging contributes to economic growth and job creation, there is also a strong societal demand for reducing its environmental impact.

Furthermore, commercial logging is identified as the largest GHG emission source in PNG, and the NDC request improving the monitoring of logging. PNGFA is advancing amendments to the Forestry Act to institutionalize Nature-Based Solutions, including carbon conservation, thereby strengthening legal frameworks. In addition, the REDD+ phase in PNG is shifting from preparation to implementation following the approval of REDD+ RBP by the GCF Board in November 2024. Therefore, there is a possibility that these logging-related measures could be incorporated as part of the implementation contents.

Regarding assisted natural regeneration, the National Strategies for Reforestation and Afforestation (NSRA), established in 2020, include assisted natural regeneration as one of the 15 strategies to promote reforestation and afforestation. The revised LCoP also promotes the restoration of logged-over forests through assisted natural regeneration, including enrichment planting. Furthermore, revisions to the Concession Agreement are underway to mandate the implementation of assisted natural regeneration by logging companies. The logging company in Marshall Lagoon & Unu Amau FMA (the project pilot site) plans to implement reforestation activities under its Annual Working Plan.

During the pilot activities, an MoU was signed among landowners, logging companies, and PNGFA to ensure sustainable land use for assisted natural regeneration activities. The steps were compiled into a user manual for assisted natural regeneration.

(ii) Institutional and organizational aspects of the implementing agency

During the project implementation of this project, the Forest Policy and Planning Directorate (FPPD) and the Field Operation Directorate (FOD) in PNGFA demonstrated strong ownership and worked collaboratively with the JICA team and other stakeholders. Both directorates have a strong commitment to continuing and expanding the project's achievements. As the authority responsible for forest management, PNGFA possesses the necessary technical sections and local offices to facilitate the continuation and expansion of project activities. Below is an overview of the organizational structure of the two key directorates involved in the project.

● Field Operation Directorate (FOD)

FOD is the directorate responsible for monitoring of logging operations and has Provincial Forest Offices across PNG. Project Supervisors and Monitoring Officer, who monitor the field logging operation, are allocated to each concession. Additionally, FOD promotes Natural Forest Management (NFM) activities to facilitate forest regeneration after selective logging, with NFM Officers stationed in some provinces. FOM led the project activities including, PMCP and LCoP training, assisted natural regeneration, and carbon monitoring in coordination with provincial offices.

● Forest Policy and Planning Directorate (FPPD)

FPPD consists of four branches, each contributing to project implementation including, FRIMS utilization, carbon monitoring, and PMCP & LCoP training based on their areas of

expertise.

- **Policy and Aid Coordination Branch:** Project management and donor coordination
- **Planning and Inventory Branch:** FRIMS utilization, forest inventory, collaboration with Expertise France (EF)
- **Climate Change Branch:** Carbon monitoring
- **Mapping Branch:** FRIMS utilization, GIS & GPS training for logging companies

(iii) Technical Aspects

As mentioned in 1-6-2, PNGFA, as the government agency responsible for forest management, has technical directorates and branches, regional offices, the Forest Research Institute, and many forestry professionals.

In this project, the monitoring of logging operation based on PMCP and LCoP, which is one of PNGFA's main duties, was strengthened through training, enhancing the technical capacity of field officers. Additionally, in the pilot activities for assisted natural regeneration, officers were trained to promote these activities, and a user manual was developed to support future expansion.

Furthermore, for carbon monitoring, a new initiative, training sessions and field monitoring were conducted for PNGFA officers, developed capacity of implementing carbon monitoring.

(iv) Financial Aspects

In general, the financial situation of PNG government agencies is challenging, with budget allocations often falling short despite being officially approved. PNGFA also faces financial constraints; however, it has independent revenue sources, including royalties and taxes from logging operations, making it relatively well-funded compared to other government agencies in PNG. Nevertheless, given the prioritization of expenditures within its limited budget, it remains uncertain whether all activities of this project can be sustained solely through general financial resources.

An example of these financial limitations can be seen in the PNGFRIMS system. The computers used for PNGFRIMS were provided through Japan's grant aid in 2012, and although 13 years have passed since their provision, they have yet to be replaced despite the need for upgrades. This highlights the challenges PNGFA faces in securing funding for essential infrastructure updates, which could impact the long-term sustainability of project activities.

On the other hand, with the increasing importance of climate change measures, multiple donors, including the EU, USAID, ITTO, FAO, the UK, JICA, and ADB, have been actively engaged in forest conservation efforts in PNG. Additionally, mobilization of financial resources related to REDD+ is expected.

Particularly, this project collaborates with the EU-FCCB project, and PNGFA plans to utilize this partnership and resources to expand the project outcomes.

2. Key Factors Affecting Implementation and Outcomes

None.

3. Evaluation on the results of the Project Risk Management

Risks	Actions for Mitigation
Project activities are not strongly rejected by the stakeholders (logging companies, landowners).	In selecting the pilot sites, the degree of cooperation by the logging companies was used as one of the selection criteria. The PNGFA Managing Director issued a letter to each company to cooperate to JICA-PNGFA Forest Project. For implementing assisted natural regeneration activities, In addition, project members interviewed landowners and logging companies to have mutual understanding. And activity contents and each responsibility were summarized in MoU for having common understandings among stakeholders.
Project members are not involved in any accidents during field visits	When security conditions deteriorated due to some events, field visits were postponed. In preparing the travel plan, the project members carefully reviewed the local conditions and consider necessary security measures including accommodation and security guards.
PNG-FRIMS, which is the basis for the project's planned activities, was not working because of a virus infection when project started.	Project members discussed countermeasures and short-term experts led its temporary restoration of PNG-FRIMS collaborating with GIS and IT branch of FA on October 2022. Short-term experts procured one workstation and transferred trouble shooting to PNGFA staff to install PNG-FRIMS into PNGFA new server. Installation of FRIMS to PNGFA new server was done on November 2023 after solving various technical issues.
Shortage of budget (Running cost of training)	PMCP and LCoP training for PNGFA officers was scaled up from the pilot area scale to national scale and budget increased. PNGFA and JICA agreed to implement co-funding training and both sides secured the budget. For implementation of PMCP/LCoP training for industry, the project collaborated with other development partners for the financial support.

4. Lessons Learnt

- **Consensus Building with stakeholders:** In PNG, most land ownerships are customary land, it is essential for tree planting activities to make consensus building with landowners. Insufficient consensus building could lead to the project terminations, as seen in several instances across the country. In this project, **PNGFA, landowners, and logging companies engaged in consensus-building discussions, which were formalized**

through the signing of an MoU. This process took a certain period but helped clarify the roles and responsibilities of stakeholders, foster a common understanding, and **contributed to the smooth implementation of the project with stakeholders.**

- **Costs of Regional Training:** For implementation of regional training workshops, the cost was relatively high due to high transportation costs (airfare, boat, and vehicle expenses) and high facility cost due to necessity of good security with stable electricity supply. In this project, six training sessions (each was five to six days with 30–40 participants) were conducted, with an **average cost of approximately PGK 200,000**, described in the budget and expenditures for Activities 1-5 and 1-6.
- **Utilization of Project Vehicles:** The JICA team for this project consisted of both long-term and short-term experts, with project vehicles managed by long-term experts. Short-term experts were required to use rented vehicles within their own budget. Therefore, to reduce rental car costs, multiple short-term experts were planned to be dispatched simultaneously. On the other hand, most of the project's counterparts (C/Ps) were responsible for coordinating multiple short-term expert activities. **If multiple short-term experts arrived at the same time, C/Ps might not be able to dedicate sufficient time to each expert.** To address this, **project vehicles were shared between long-term and short-term experts to reduce rental car costs whenever possible.** Additionally, short-term experts were dispatched at different schedule to improve efficiency in project implementation.
- **Pilot Activities in the Logging Site:** In this project, conducting activities in pilot areas (logging sites) required **high costs for transportation (flights, boats, rental cars) and security measures.** Additionally, frequent flight delays and cancellations sometimes prevented activities from proceeding as planned. Therefore, **additional time and costs should be considered** when conducting activities in remote areas or other provinces. Furthermore, **off-road vehicles**, such as Land Cruisers, **are essential for driving logging areas**, and since there are no accommodations available, it is **necessary to coordinate with logging companies to use their facilities.**

5. Performance (JICA HQ and PNG office's specific role)

JICA Headquarters Monitoring Mission (October 2023)

The monitoring mission was dispatched from JICA HQ in October 2023, during the mid-term phase of the project. The mission conducted discussions with JICA and PNGFA project members on progress and challenges and **provided recommendations.**

Based on these recommendations, project members rearranged the dissemination plan for PMCP/LCOP and clarified the definition of Low Emission Logging as well as the objectives of Field Carbon Monitoring. **The discussions among project members based on these recommendations were crucial in defining project's direction and advancing activities.**

The monitoring of project planning and progress in PNG is conducted through JCC meetings, where recommendations from JCC members are incorporated. On the other hand, **monitoring conducted by JICA HQ' forestry experts provided an evaluation from a different perspective** of JCC members, which also **contributed to improving the quality of project implementation**.

Consensus Building for Collaboration with Other Development Partners

This project worked with other development partners, such as the EU-FCCB project, to scale up outcomes developed by the project.

For effective consensus-building in such collaborations, participation from not only project members but also **representative from the JICA PNG office including Chief Representative to discuss with leaders of relevant institutions** including Managing Director of PNGFA was crucial. Furthermore, inviting each representative to JCC meetings and Steering Committee meetings helped share progress and plans, ensuring better coordination.

6. Additionality

EU Forest, Climate Change and Biodiversity (FCCB) Program is huge project with the budget 55 million Euro, and commenced in 2024. JICA and PNGFA discussed the possibility of collaboration with the FCCB project. The project had discussion with Expertise France (EF), one of the implementation Agency of the FCCB Program, and PNGFA, JICA and EF agreed to implement some collaborative activities.

The collaboration was approved by 4th JCC meeting on April 2024 with the attendance of the EU-FCCB project representative. Based on these agreements, collaborative activities including PMCP/LCoP training were conducted to expand the outcomes of the project.

After completion of the project, PNGFA will continue to some of the project activities collaborating with EU-FCCB.

IV. For the Achievement of Overall Goals after the Project Completion

1. Prospects to achieve Overall Goal

Indicator1. The revised PMCP and LCoP are disseminated in the major logging companies operating in PNG.

As stated in the section of Activity 1-6, the project developed the plan to disseminate PMCP/LCoP to forest industry across the country through seven regional training workshops. The project implemented three training workshops among seven for forest industry. The training materials were developed by the project and all training sessions were organized at 3rd training workshop by PNGFA and contracted two trainers, and capacity building for PNGFA officers to implement this training has been completed.

As stated in the section of recommendation, the remaining four regional training workshops are suggested to conduct to disseminate PMCP/LCoP to all major companies in PNG collaborating with the Expertise France.

Indicator2. The technological contents developed by the project such as natural regeneration and carbon monitoring are reflected in the sustainable forest management activities in PNG.

As stated in the section of Activity 2-5, the project developed the user manual for assisted natural regeneration (ANR) for practical use to implement the ANR project. The measure to reflect the manual in the forest management activities are proposed in the section of "Recommendation".

As stated in the section of Activity 2-3, the project developed the project manual for field carbon monitoring to estimate emissions from logging operation. The measure to reflect the manual in the forest management activities are proposed in the section of "Recommendation".

Indicator3. At least 10 PNGFA staff acquire forest carbon monitoring techniques nationwide.

As stated in the section of Project Indicator 4, the three PNGFA officers are trained as the technical experts of forest carbon monitoring through involvement of project activities.

From the project activities, the challenging part to acquire is identified as the calculation of forest carbon monitoring. The measure to train knowledgeable officers are proposed in the section of "Recommendation".

Indicator4. Carbon monitoring data, especially wood removal data, collected through the field carbon monitoring procedures developed by this project is used for national reporting on Climate Change.

As stated in the section of Activity 3-3, the project developed the method to estimate

emission from logging operation. In addition, the project conducted survey and estimation of logging emission at 2 pilot sites. This data is the essential data to develop wood removal data for national reporting.

As stated in the section of “Recommendation”, the necessary measure to accumulate the data and following necessary actions is recommended.

2. Plan of Operation and Implementation Structure of the PNGFA side to achieve Overall Goal

The plan of operation and implementation structure of the PNGFA side to achieve Overall Goal is included in the “Recommendations for PNGFA side”, refer to the following section.

3. Recommendations for the PNGFA side

The project team including PNGFA officers and JICA experts discussed the recommendation to PNGFA Management to present at final JCC meeting and final workshop. The recommendation includes plan of operation and implementation structure the developed recommendation by the project team is described here.

(i) Recommendation on Output 1 (Application of PMCP and LCoP to stakeholders)

This recommendation was developed at the wrap-up meeting for PMCP/LCoP Training held on 5th February 2025, with the participation of 12 PNGFA officers and 2 JICA experts.

Project Results (Output1):

The project identified key stakeholders to disseminate PMCP and LCoP as PNGFA officers and employees of logging companies. The project **implemented the following training workshops using developed materials:**

- **Three regional training workshops** on the PMCP and revised LCoP **for PNGFA field officers**, from September 2023 to March 2024, aimed at capacity building of monitoring capabilities of PNGFA officers. (Activity 1-5)
- **Three training workshops** (NGI1, Southern1, Momase2) on the PMCP and the revised LCoP **for the forest industry**, from September 2024 to November 2024, aimed at promoting application of the PMCP and the LCoP at logging operation. (Activity 1-6)

Suggestions and Recommendations:

1. PNGFA should **continue conducting training workshops in the remaining four regions (NGI2, Momase1, Souther2, and Southern3) in 2025 to disseminate PMCP and LCoP across the forest industry** in close collaboration with relevant partners, particularly Expertise France.
2. PNGFA should **consider conducting additional training workshops for PNGFA field officers to equip them with QFIELD and QGIS** to further improve logging monitoring.
3. PNGFA should **consider the provision of essential equipment and tools, such as PCs and smartphones for QFIELD, as well as GPS devices**, to enhance the effectiveness of logging monitoring for field officers.
4. PNGFA should **promote the exchange of GIS data on logging operation with**

logging companies to improve logging monitoring, while also considering the revision of PMCP, utilization and maintenance of PNGFRIMS to support this initiative.

(ii) Recommendation on Output 2 (Promotion of Assisted Natural Regeneration (ANR))

This recommendation was developed at the Technical Workshop on Finalization of ANR User Manual held on 6th March 2025, with the participation of 12 PNGFA officers and 2 JICA experts.

Project Results of Output 2

The project identified key stakeholders as PNGFA (field) officers, employees of logging companies, and land owners to disseminate natural regeneration activities. The project implemented the following activities:

- **Implementation of pilot activities of ANR at 3 pilot sites** (Identification of pilot areas, consensus building including MoU, development of implementation plan at pilot sites, actual implementation and dissemination of ANR project, etc)
- **Development of User manual for assisted natural regeneration**

Analysis on current condition:

The implementation experiences of ANR project in PNG has been limited. The accumulation of technical knowledge, and stakeholder's experiences within PNGFA and logging companies are also limited.

To disseminate ANR activities, PNGFA need to identify the challenges to be addressed at each phase—short-term, mid-term, and long-term—and implement a phased approach for its expansion.

The JICA-PNGFA Project Team recommend:

1. Continuation and Expansion of Project Activities (Short-Term)

For initial activities, PNGFA continue project activities and strengthen the foundation for ANR dissemination.

- Continue ANR activities at the three pilot sites.
- Utilize Marshall Lagoon & Unu Amau FMA (pilot site) as a model case for ANR activity.
- Encourage all NFM (Natural Forest Management) officers to use the user manual in their activities and conduct training as needed.
- Distribute the user manual to logging companies, support their implementation on ANR activities, and provide training as needed.

2. Establishing a Foundation for ANR Expansion (Mid-Term)

For mid-term promotion, PNGFA promote the following initiatives to expand ANR dissemination:

- Strengthen the monitoring and evaluation of ANR activities in collaboration with the Forest Research
- Develop a dissemination strategy for ANR activities.
- Establish mechanism to enhance the involvement of logging companies and to encourage active participation from landowners.

3. Large-Scale Dissemination and Sustainable Implementation of ANR (Long-Term)

For the long-term promotion, PNGFA establish a sustainable dissemination framework of ANR across PNG.

- Collect, analyze, and widely disseminate successful ANR case studies.
- Develop institutional frameworks to promote ANR and strengthen implementation mechanism.

(iii) Recommendation on Output 3 (Development of Forest Carbon Monitoring)

This recommendation was developed at the Technical Workshop on Forest Carbon Monitoring held on 20th February 2025, with the participation of 13 PNGFA officers and 3 JICA experts.

Result:

- (1) **Developed field carbon monitoring method**
- (2) **Conducted field carbon monitoring at 2 pilot sites (3 set-ups)**
- (3) **Estimated carbon emission at 3 setups**
- (4) **Capacity building for field carbon monitoring**

Recommendation for forest carbon monitoring and reducing emission from logging

1. **Accumulate field carbon monitoring data:** Using the project outcomes of carbon monitoring methods to accumulate more carbon emission data at set-up level.
2. **Institutional arrangement:** As forest carbon monitoring is a new initiative for PNGFA, a project team needs to be established to ensure its continuation. This team should be composed of related technical directorates.
3. **Expand field carbon monitoring:** Expand carbon monitoring from the setup level to concession and provincial levels to assess carbon emissions from logging operations on a broader scale.
4. **Working with Expertise France (EF):** Working with EF, Key actions of carbon monitoring in 2025: (1) Identify province, (2) Plan carbon monitoring (numbers & types of projects and setups, project types, and forest classification (primary or secondary)). (3) Technical sessions (Identification of operational practices to reduce carbon emissions (Bulldozer and Chainsaw operators, Data Exchange), Capacity building, Refinement of method)
5. **Assess emission reduction by LCoP compliance:** (1) Identify operational practices in LCoP contributing to emission reduction, (2) Compare emission level between compliance and non-compliance operations, (3) Assess the effect of the carbon emission reduction from the compliance of LCoP.
6. **Pursue an opportunity for forest carbon project:** Accumulate sufficient emission data from logging operations through the Actions above, and pursue an opportunity to develop a forest carbon project.
7. **Assess logging emission and explore measures for its reduction:** Conduct a comprehensive assessment of logging emissions and explore measures for emission reduction. By utilizing the results, contribute to the achievement of PNG's Nationally Determined Contribution and global climate change mitigation efforts.

4. Monitoring Plan from the end of the Project to Ex-post Evaluation

(If the Project will be continuously monitored by JICA after the completion of the Project, mention the plan of post-monitoring here.)

JICA will conduct an ex-post evaluation to verify the achievement of the Overall goal after three years (in 2028) of completion of the Project.

ANNEX

ANNEX 1: Results of the Project

(List of Dispatched Experts / Equipment / Counterparts)

ANNEX 2: List of Products (Report, Manuals, Handbooks, etc.)

ANNEX 3: PDM (All versions of PDM)

Separate Volume: Copy of Products Produced by the Project

ANNEX 1: Results of the Project

1-1 Input by the Japanese side: list of JICA long-term experts, list of short-term experts, and equipment list are provided as follows

Table 1-1: List of long-term experts

Name	Designation	Duration
Mr. Masato Okabayashi	Chief Adviser / Forest Policy	14 th April 2022-13 th April 2025
Mr. Yusuke Nishiyama	Coordinator	1 st June 2022 - 31 st May 2024
Mr. Ippei Tomo	Coordinator / Forest Management	6 th April 2024- 13 th April 2025

Table 1-2: List of short-term experts

Name	Designation	Total Person Months Assigned
Dr. Takahiro Koide	Team Leader / Forest Management 1	6.82 MM
Ms. Ayako Ochi	Deputy Team Leader / Forest Management 2	3.23 MM
Mr. Masamichi Haraguchi	Carbon Monitoring 1	1.70 MM
Mr. Hirokazu Takahashi	Forest Restoration / Forest Carbon Monitoring 2 / Measurement 1	6.94 MM
Mr. Masayoshi Minegishi	Forest Information/Measurement 2	8.22 MM
Mr. Stephan Salim	Training / Exit Strategy	2.07 MM
Mr. Takaaki Kato	Training / Exit Strategy	1.23 MM

Table 1-3: List of Equipment

No.	Items	Specifications
1	Laptop computer	Dell latitude i5-1135 G7
2	Laptop computer	Dell latitude i5-1135 G7
3	Printer	Lexmark MC3326ADWE
4	Project vehicle	Nissan Patrol
5	Printer	HP Color Laser Jet Pro MFP M283
6	Printer	HP Color Laser Jet Pro MFP M283
7	Workstation for PNGFRIMS	DESKTOP LENOVO TCENTRE M70sSSF
8	Drone	DJI Mavic 3 Enterprise
9	RTK module	DJI Mavic 3 Enterprise Series PART 01-RTK Module
10	Battery kit	DJI Mavic 3 Enterprise Series PART 05-Battery Kit
11	GNSS Mobile Station and case	DJI D-RTK 2 High Precision GNSS Mobile Station
12	Workstation	HP Z2 SFF G9 i7 16GB 512GBSSD 1TBHDD T400-4G WIFI 2xmDP W11P 3y
13	Monitor	Philips Evnia 27" GHD Curved 16:9 1ms HDMI DP Tilt 3yr
14	Laptop computer	Lenovo IdeaPad Slim 3 14" i5 8GB W11H Grey 1Yr SN:PF4NPCHG
15	Laptop computer	Lenovo IdeaPad Slim 3 14" i5 8GB W11H Grey 1Yr SN:PF4NPCHG
16	Laptop computer	Lenovo IdeaPad Slim 3 14" i5 8GB W11H Grey 1Yr SN:PF4NPCHG
17	Workstations for drone image analysis	HP Z2 SFF G9 i7 16GB 512GBSSD 1TBHDD T400-4G WIFI 2xmDP W11P 3y
18	Workstations for drone image analysis	HP Z2 SFF G9 i7 16GB 512GBSSD 1TBHDD T400-4G WIFI 2xmDP W11P 3y
19	Drone	DJI Mavic 3 Enterprise
20	Drone	DJI Mavic 3 Enterprise

1-2 Input by the PNG side: List of PNGFA counterparts is provided as follows

Table 1-4: List of Counterparts

Name (Project Position)	Designation
Mr. Dambis Kaip (Project Director)	Director, Forest Policy and Planning Directorate
Mr. Alois Jenkihau (Deputy Project Director)	Manager of Policy & Aid Coordination Branch, Forest Policy and Planning Directorate
Mr. John Orabi (Project Manager)	Deputy Director (New Guinea Island), Field Operation Directorate
Mr. Gewa Gamoga (Deputy Project Manager)	Director, Reforestation and Afforestation Directorate
Forest Policy and Planning Directorate (FPPD)	
Ms. Margaret Tongo	Manager, Forest Planning & Inventory Branch
Mr. Patrick La'a	Manager, Mapping Branch
Ms. Elizabeth Kaidong	Manager, Climate Change Branch
Mr. Perry Malan	Supervisor Forest WP & Mapping, Mapping Branch
Mr. Jehu Antiko	Senior Forest Base Map, Mapping Branch
Mr. Ledino Saega	Senior Inventory Officer, Forest Planning & Inventory Branch
Mr. John Pena	Senior Planning Officer, Forest Planning & Inventory Branch
Mr. Stanley Pundiye	Forest Plans Officer, Forest Planning & Inventory Branch
Mr. Mannu Wakol	Inventory & Mapping Officer, Forest Planning & Inventory Branch
Mr. Oala Iuda	Senior Forest & Land Use Monitoring Officer, Climate Change Branch
Field Operation Directorate (FOD)	
Mr. Lyall Umbo (JCC member)	Director
Mr. Linden Oa	Deputy Director (Southern Region), FOD
Mr. Vicent Batau	Deputy Director (Momase Region), FOD
Mr. Ivo Kusip	Coordination Quality Control & Assurance, FOD
Mr. Joseph Kerowa	Compliance Officer, NGI, Field Operations Directorate
Mr. Clinton Pundu	Natural Forest Management Coordinator, FOD
Mr. Steven Sine	Compliance & Enforcement Officer, FOD
Ms. Jacklyn Paul	Compliance Officer -Momase region,FOD
Provincial Forest Office (FOD)	
Mr. Charles Pakure	Provincial Forest Manager-Central Province
Mr. Norman Cappock	Project Supervisor, Marshall Lagoon & Unu Amau FMA
Mr. Kalan Ramute	Provincial Forest Manager-West Sepick Province,

Mr. Philip Topaiman	Project Officer, Amanab Block 1&4, West Sepik Province,
Mr. Damien Doko	Provincial Coordinator Reforestation & Afforestation, West Sepik
Mr. Peter Ramute	Provincial Forest Manager-East New Britain Province
Mr. Rexford Biralavi Felix	Project Officer, Open Bay, ENB, Field Operations Directorate
Mr. John Aigilo	Provincial Forest Manager-West New Britain Province
Mr. Yakop Pasul	Provincial Forest Manager-Gulf Province
Mr. Malcom Kutuapi	Provincial Forest Manager-Western Province
Mr. Constin Bigol	Provincial Forest Manager-Madang Province
Mr. Absalom Haiyo	Provincial Forest Manager-Morobe Province
Mr. Gavis Visam	Project Supervisor, Northern Vanapa TRP
Mr. Peter Lat	Technical Officer, West New Britain Provincial Office
Mr. John Garimuk	Project Supervisor, Bialla
Mr. Kenneth Mamu	Project Supervisor, Kumil TRP, Field Operations Directorate
Human Resource & Administration Directorate (HRAD)	
Mr. Cosmas Numbaru (JCC member)	Manager, Organizational Development Branch,
Mr. Raphael Moini	Learning & Development Officer, Organizational Development Branch
Reforestation & Afforestation Directorate (RAD)	
Mr. Tom Bukon	Tree Plantation Manager - Kuriba
Mr. Wayne Karabau	Establishment Officer
Forest Allocation & Acquisition Directorate (FAAD)	
Mr. Jim Menge (JCC member)	Director
Mr. Ori Renagi (JCC member)	Manager, Allocations Branch
Mr. Leslie Vaira	Project Officer/Momase
Media Office	
Ms. Debes Kenny	Media Officer
Forest Research Institute (FRI)	
Mr. Goodwill Amos (JCC member)	(Former) Director
Mr. Sam Nalish	Acting Director
Mr. Patrick Nimiago	Manager, Natural Forest Management Program
Mr. Anton Lata	Manager, Planted Forest
Mr. Buruno Kuroh	Senior Ecologist – Growth & Yield
Mr. Maman Tavune	Senior Silviculturist, Regeneration Studies

ANNEX 2: List of Products

List of products (Fact Sheets, Reports, Manuals, etc.) produced by the project is provided as follows.

Table 2-1: List of products

No	Output	Item	Description
1	-	Fact Sheet No1 Overview - JICA-PNGFA Project III	Overview of JICA-PNGFA project.
2	Output 1	Fact Sheet No2 Mobile Device Tools for Forest Monitoring	Introduction of mobile Apps (QField and Kobo Toolbox) for usage of logging monitoring in PNG.
3	Output 2	Fact Sheet No3 Assisted Natural Regeneration After Logging Amanab Model	Assisted natural regeneration activities in Amanab focusing on enrichment planting, silvicultural treatments, and monitoring.
4	Output 1	Fact Sheet No4 PMCP/LCoP Training for PNGFA Officers	Results of 3 regional training for PNGFA officers on PMCP and LCoP
5	Output 1	Fact Sheet No5 PNGFA-JICA Forest Project Training for Forest Industry	This fact sheet summarizes the outline and results of three regional training for Forest Industry on PMCP and LCoP.
6	-	Result of training in Japan	JICA-PNGFA project training in Japan, including training results and proposal from participants
7	Output 1	Summary on Training for revised LCoP and PMCP in Southern region	PMCP/LCoP Training Reports for PNGFA, which include Outline, Participants, Program, Budget, Handout list, Result of Discussion, Training Evaluation, Logistic The report for Souther Region includes articles of the training The report for NGI Region includes training materials.
8	Output 1	Summary on Training for revised LCoP and PMCP in Momase region	
9	Output 1	Summary on Training for revised LCoP and PMCP in NGI region	
10	Output 1	Training Report on PMCP and revised LCoP for Forest Industry Employment in West New Britain Province	PMCP/LCoP Training Reports for Forest Industry, which include Training Plan, Budget, Program, Result of the training, Training Evaluation,
11	Output 1	Training Report on PMCP and revised LCoP for Forest Industry Employment in Central Province	Participant list, Program, Handout list, Result of trainees mapping exercise, Logistic.

12	Output 1	Training Report on PMCP and revised LCoP for Forest Industry Employment in Madang Province	
13	Output 1	Dissemination Plan of PMCP and LCoP (Technical Contents)	This report includes technical contents developed by the project such as Qfield, Data exchange between companies, PMCP check list, advanced monitoring, etc.
14	Output 2	Implementation Plan for the Pilot Activity on Assisted Natural Regeneration (ANR) in Marshall Lagoon and Unu Amai FMA	This plan was developed to implement ANR pilot activity in Marshall Lagoon and Unu Amai FMA. It includes project site, stakeholder's role and responsibilities, activities, and schedule.
15	Output 2	User Manual for Assisted Natural Regeneration after Logging	This manual outlines a five-phase process for ANR implementation: (1) Preliminary survey, (2) Consensus-building, (3) Planning, (4) Implementation, (5) Monitoring.
16	Output 3	Setup-level Method for Field Carbon Monitoring of Logging Emission	This document outlines a method for monitoring carbon emissions from logging at set-up level, including field measurements, and emission calculations.
17	Output 3	Project Manual for Field Carbon Measurements (Attachment of No. 16)	The manual outlines a field survey process for logging carbon monitoring, focusing on skidding, felling, and hauling operations.
18	Output 3	Project Manual for Logging Carbon Emission Calculation (Attachment of No. 16)	The manual outlines a process for calculating carbon emissions from the field survey.
19	Output 3	First results of the carbon performance of logging operations in PNG using the setup-scale methodology	The report documents the results of a trial field carbon monitoring at Marshall Lagoon and Unu Amai FMA, Central Province.
20	Output 3	Trial Field Carbon Monitoring on Logging Operations at Open Bay Timber, East New Britain Province	The report documents the results of a field carbon monitoring at Open Bay Timber, East New Britain Province.

ANNEX 3: PDM (all versions of PDM)

- PDM ver 1.1 (Revised in December 2022 by exchanging Record of Discussion)
- PDM ver 2 (Revised in August 2023 by 2nd Monitoring Sheet)
- PDM ver 3 (Revised in April 2024 at 4th JCC meeting)

Project Design Matrix

Project Title: Capacity development project for reducing carbon emissions from forest degradation through commercial logging in PNG by improving monitoring system of forest logging operations

Implementing Agency: PNG Forest Authority (PNGFA) and Japan International Cooperation Agency (JICA)

Target Group: Direct beneficiaries: PNG Forest Authority (Officers from the headquarter and the provincial offices), Logging companies, Landowners.
Ultimate beneficiaries: All people in Papua New Guinea

Duration: 14/April/2022 – 13/April/2025

Project Site: Marshall Lagoon & Unu Amau Consolidated FMA Extension Project in Central Province, Amanab Blocks 1-4 & Imonda-Awai Consolidated FMA Project in West Sepik Province, Open Bay Forest Plantation Project in East New Britain Province

Version 1.1
Dated 25th October 2022

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal Forests in PNG are conserved, managed in a sustainable manner and, at the same time, its conservation is promoted as an important measure against climate change.	1. The revised PMCP and LCoP are disseminated in the major logging companies operating in PNG. 2. The technological contents developed by the project such as natural regeneration and carbon monitoring are reflected in the sustainable forest management activities in PNG. 3. At least 10 PNGFA staff acquire forest carbon monitoring techniques nationwide. 4. Carbon monitoring data, especially wood removal data, collected through the field carbon monitoring procedures developed by this project is used for national reporting on Climate Change.	1. Questionnaire 2. Relevant documents 3. Interview 4. Relevant documents	/
Project Purpose The capacity of stakeholders for enforcement of rules and procedures on logging operations and natural regeneration activities are strengthened for reducing forest degradation and promoting low emission logging.	1. In PNGFA headquarters and pilot sites provincial offices, total 5 PNGFA staff capable of disseminating PMCP, LCoP and natural regeneration are trained. 2. Measures to promote natural regeneration are organized and recommended. 3. Measures of low emission logging are organized and recommended. 4. In PNGFA headquarters and pilot sites provincial offices, total 5 PNGFA staff are trained as technical experts of forest carbon monitoring. 5. Good logging activities based on PMCP and LCoP are shared as best practices.	1. Questionnaire 2. Recommendation 3. Recommendation 4. Questionnaire 5. Relevant documents	
Outputs 1. The Planning, Monitoring and Control Procedure (PMCP) and the Logging Code of Practice (LCoP) are well understood and applied by project stakeholders (Government, Forest industry, etc).	1. Not lower than 80% of PNGFA officers, who received the training, improves understanding of PMCP and LCoP. 2. Not lower than 80% of timber company foresters, who received the training, improves understanding of PMCP and LCoP. 3. Documents on complying with PMCP and LCoP are developed and disseminated to project stakeholders.	1. Questionnaire 2. Questionnaire 3. Document on the programs and materials	
2. The ability of stakeholders (Government, Forest industry, Landowners, etc.) to effectively carry out natural regeneration practice is improved.	1. User manual to manage natural regeneration is finalized. 2. Not lower than 80% of PNGFA officers and stakeholders, who receives the manual, improves their understanding of the manual's content.	1. Document on the training manuals 2. Questionnaire	There is no significant organizational and policy change in PNGFA.

3.Field carbon monitoring procedures for logging operation are developed.	1.Methods for monitoring, recording, reporting or reducing emission level from logging operation are developed. 2.At least one training session for PNGFA field officers is organized to implement carbon monitoring. 3.Measures to introduce incentives to logging sites for implementing low emission logging are proposed. 4.Measures to reduce emissions from logging operations are proposed.	1.Document on the methods 2.Document on the training program 3.Document on the suggestion 4.Document on the proposal	Proper number of counterparts is secured through the Project period. The Project activities are not strongly rejected by stakeholders such as provincial governments, landowners and logging companies.
Activities		Inputs	
1.1 Challenges are identified through reviewing actual use of PMCP and LCoP, as well as information flow of logging activities. 1.2 Based on the review of the information organized in activity 1-1, examine and identify ways to strengthen PNG-FRIMS and utilize new technologies related to GIS and remote sensing to effectively promote sustainable forest management complying with PMCP and LCoP. 1.3 Set criteria for selecting pilot site(s) to undertake trials of the effective forest management complying with PMCP and LCoP, and determine the pilot site(s). 1.4 At the pilot site(s), test the technologies identified by the activity 1-2. 1.5 Identify effective way to disseminate PMCP and LCoP to the stakeholders, and provide necessary training for the PNGFA officers to conduct the dissemination. 1.6 Support PNGFA officers to disseminate PMCP and LCoP to timber company foresters. 1.7 Prepare programs and materials introducing outputs of the project and help PNGFA to disseminate the outputs to the stakeholders in workshop(s). 2.1 Find out issues for managing natural regeneration after logging. 2-2 Identify key stakeholders, and examine implementation structure and technical improvement measures for solving the issues identified in Activity 2-1. 2-3 Conduct pilot-activities on natural regeneration by PNGFA officers and key stakeholders at the pilot site(s) determined in activities 1-3. 2-4 Develop the draft user manual in cooperation with the key stakeholders. 2-5 Finalize the user manual to disseminate natural regeneration techniques to PNGFA officers and key stakeholders.	[The Japanese Side] <u>Experts</u> Chief advisor/Forest policies Coordinator Forest management Forest carbon monitoring Forest restoration Forest information /Measurement Training/Exit strategies Other experts necessary for the implementation of the Project <u>Training</u> •The Knowledge Co-Creation Program (KCCP) for Group and Region Focus: Proceeding Ability of Policy Making for Sustainable Forest •The Project Training in Japan: Sustainable forest management •Other training necessary for the implementation of the Project <u>Machinery and Equipment</u> •Vehicle(s) •Equipment for training and survey •Other equipment necessary for the implementation of the Project	[The PNG Side] <u>Counterpart Personnel</u> Project Director Deputy Project Director Project Manager Deputy Project Manager PNGFA technical staff Other supporting staff • Suitable office space with necessary equipment • Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other necessary materials • Admission card for the PNGFA building • Available data (including maps and photographs) and information related to the Project • Running expenses necessary for the Project transportation within PNG of the equipment as well as for the installation, operation and maintenance	

3-1 Review the effects of complying with PMCP and LCoP to low emission logging activities. 3-2 Identify indicators to assess low emission logging activities (e.g. Area for roads and log landings, damaged woods due to felling, etc.). 3-3 Identify and develop methodology for monitoring, recording, reporting or reducing emission level from logging operations through trials and validations in the pilot site(s). 3-4 Develop training program and provide necessary trainings to adopt carbon monitoring for PNGFA field officers. 3-5 Compile proposals to introduce incentives to logging sites implementing low emission logging. 3-6 Compile proposals for forest carbon monitoring and reducing emissions from logging operations on the basis of the activity 3-1 to the activity 3-5. 3-7 Organize Workshop to disseminate the results of project activities.			<u>Pre-Condition</u> A budget required for PNGFA activity is secured by the PNG government. <u>Issues and countermeasures</u>
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Project Design Matrix

Project Title: Capacity development project for reducing carbon emissions from forest degradation through commercial logging in PNG by improving monitoring system of forest logging operations

Implementing Agency: PNG Forest Authority (PNGFA) and Japan International Cooperation Agency (JICA)

Target Group: Direct beneficiaries: PNG Forest Authority (Officers from the headquarter and the provincial offices), Logging companies, Landowners.

Ultimate beneficiaries: All people in Papua New Guinea

Duration: 14/April/2022 – 13/April/2025

Project Site: Marshall Lagoon & Unu Amau Consolidated FMA Extension Project in Central Province, Amanab Blocks 1-4 & Imonda-Awai Consolidated FMA

Project in West Sepik Province, Open Bay Forest Plantation Project in East New Britain Province

Version 2
Dated 22nd September 2023

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal Forests in PNG are conserved, managed in a sustainable manner and, at the same time, its conservation is promoted as an important measure against climate change.	1. The revised PMCP and LCoP are disseminated in the major logging companies operating in PNG. 2. The technological contents developed by the project such as natural regeneration and carbon monitoring are reflected in the sustainable forest management activities in PNG. 3. At least 10 PNGFA staff acquire forest carbon monitoring techniques nationwide. 4. Carbon monitoring data, especially wood removal data, collected through the field carbon monitoring procedures developed by this project is used for national reporting on Climate Change.	1. Questionnaire 2. Relevant documents 3. Interview 4. Relevant documents	
Project Purpose The capacity of stakeholders for enforcement of rules and procedures on logging operations and natural regeneration activities are strengthened for reducing forest degradation and promoting low emission logging.	1. In PNGFA headquarters and pilot sites provincial offices, total 5 PNGFA staff capable of disseminating PMCP, LCoP and natural regeneration are trained. 2. Measures to promote natural regeneration are organized and recommended. 3. Measures of low emission logging are organized and recommended. 4. In PNGFA headquarters and pilot sites provincial offices, total 5 PNGFA staff are trained as technical experts of forest carbon monitoring. 5. Good logging activities based on PMCP and LCoP are shared as best practices.	1. Questionnaire 2. Recommendation 3. Recommendation 4. Questionnaire 5. Relevant documents	There is no significant change in government's policies on forest management.
Outputs 1. The Planning, Monitoring and Control Procedure (PMCP) and the Logging Code of Practice (LCoP) are well understood and applied by project stakeholders (Government, Forest industry, etc).	1. Not lower than 80% of PNGFA officers, who received the training, improves understanding of PMCP and LCoP. 2. Not lower than 80% of timber company foresters, who received the training, improves understanding of PMCP and LCoP. 3. Documents on complying with PMCP and LCoP are developed and disseminated to project stakeholders.	1. Questionnaire 2. Questionnaire 3. Document on the programs and materials	There is no significant organizational and policy change in PNGFA.
2. The ability of stakeholders (Government, Forest industry, Landowners, etc.) to effectively carry out natural regeneration practice is improved.	1. User manual to manage natural regeneration is finalized. 2. Not lower than 80% of PNGFA officers and stakeholders, who receives the manual, improves their understanding of the manual's content.	1. Document on the training manuals 2. Questionnaire	

3.Field carbon monitoring procedures for logging operation are developed.	Activities 1.1 Challenges are identified through reviewing actual use of PMCP and LCoP, as well as information flow of logging activities. 1.2 Based on the review of the information organized in activity 1-1, examine and identify ways to strengthen PNG-FRIMS and utilize new technologies related to GIS and remote sensing to effectively promote sustainable forest management complying with PMCP and LCoP. 1.3 Set criteria for selecting pilot site(s) to undertake trials of the effective forest management complying with PMCP and LCoP, and determine the pilot site(s). 1.4 At the pilot site(s), test the technologies identified by the activity 1-2. 1.5 Identify effective way to disseminate PMCP and LCoP to the stakeholders, and provide necessary training for the PNGFA officers to conduct the dissemination. 1.6 Support PNGFA officers to disseminate PMCP and LCoP to timber company foresters. 1.7 Prepare programs and materials introducing outputs of the project and help PNGFA to disseminate the outputs to the stakeholders in workshop(s). 2.1 Find out issues for managing natural regeneration after logging. 2-2 Identify key stakeholders, and examine implementation structure and technical improvement measures for solving the issues identified in Activity 2-1. 2-3 Conduct pilot-activities on natural regeneration by PNGFA officers and key stakeholders at the pilot site(s) determined in activities 1-3. 2-4 Develop the draft user manual in cooperation with the key stakeholders. 2-5 Finalize the user manual to disseminate natural regeneration techniques to PNGFA officers and key stakeholders.	Inputs [The Japanese Side] <u>Experts</u> Chief advisor/Forest policies Coordinator Forest management Forest carbon monitoring Forest restoration Forest information /Measurement Training/Exit strategies Other experts necessary for the implementation of the Project <u>Training</u> •The Knowledge Co-Creation Program (KCCP) for Group and Region Focus:Proceeding Ability of Policy Making for Sustainable Forest •The Project Training in Japan :Sustainable forest management •Other training necessary for the implementation of the Project <u>Machinery and Equipment</u> •Vehicle(s) •Equipment for training and survey •Other equipment necessary for the implementation of the Project	1.Methods for monitoring, recording, reporting or reducing emission level from logging operation are developed. 2.At least one training session for PNGFA field officers is organized to implement carbon monitoring. 3.Measures to introduce incentives to logging sites for implementing low emission logging are proposed. 4.Measures to reduce emissions from logging operations are proposed.	1.Document on the methods 2.Document on the training program 3.Document on the suggestion 4.Document on the proposal	Proper number of counterparts is secured through the Project period. The Project activities are not strongly rejected by stakeholders such as provincial governments, landowners and logging companies.
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3-1 Review the effects of complying with PMCP and LCoP to low emission logging activities. 3-2 Identify indicators to assess low emission logging activities (e.g. Area for roads and log landings, damaged woods due to felling, etc.). 3-3 Identify and develop methodology for monitoring, recording, reporting or reducing emission level from logging operations through trials and validations in the pilot site(s). 3-4 Develop training program and provide necessary trainings to adopt carbon monitoring for PNGFA field officers. 3-5 Compile proposals to promote the implementation of low emission logging. 3-6 Compile proposals for forest carbon monitoring and reducing emissions from logging operations on the basis of the activity 3-1 to the activity 3-5. 3-7 Organize Workshop to disseminate the results of project activities.			<u>Pre-Condition</u> A budget required for PNGFA activity is secured by the PNG government. <u>Issues and countermeasures</u>
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Project Design Matrix

Project Title: Capacity development project for reducing carbon emissions from forest degradation through commercial logging in PNG by improving monitoring system of forest logging operations

Implementing Agency: PNG Forest Authority (PNGFA) and Japan International Cooperation Agency (JICA)

Target Group: Direct beneficiaries: PNG Forest Authority (Officers from the headquarter and the provincial offices), Logging companies, Landowners.
Ultimate beneficiaries: All people in Papua New Guinea

Duration: 14/April/2022 – 13/April/2025

Project Site: Marshall Lagoon & Unu Amau Consolidated FMA Extension Project in Central Province, Amanab Blocks 1-4 & Imonda-Awai Consolidated FMA Project in West Sepik Province, Open Bay Forest Plantation Project in East New Britain Province

Version 3
Dated 29th April 2024

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal Forests in PNG are conserved, managed in a sustainable manner and, at the same time, its conservation is promoted as an important measure against climate change.	1. The revised PMCP and LCoP are disseminated in the major logging companies operating in PNG. 2. The technological contents developed by the project such as natural regeneration and carbon monitoring are reflected in the sustainable forest management activities in PNG. 3. At least 10 PNGFA staff acquire forest carbon monitoring techniques nationwide. 4. Carbon monitoring data, especially wood removal data, collected through the field carbon monitoring procedures developed by this project is used for national reporting on Climate Change.	1. Questionnaire 2. Relevant documents 3. Interview 4. Relevant documents	
Project Purpose The capacity of stakeholders for enforcement of rules and procedures on logging operations and natural regeneration activities are strengthened for reducing forest degradation and promoting low emission logging.	1. In PNGFA headquarters and pilot sites provincial offices, total 5 PNGFA staff capable of disseminating PMCP, LCoP and natural regeneration are trained. 2. Measures to promote natural regeneration are organized and recommended. 3. Measures of low emission logging are organized and recommended. 4. In PNGFA headquarters and pilot sites provincial offices, total 5 PNGFA staff are trained as technical experts of forest carbon monitoring. 5. Good logging activities based on PMCP and LCoP are shared as best practices.	1. Questionnaire 2. Recommendation 3. Recommendation 4. Questionnaire 5. Relevant documents	There is no significant change in government's policies on forest management.
Outputs 1. The Planning, Monitoring and Control Procedure (PMCP) and the Logging Code of Practice (LCoP) are well understood and applied by project stakeholders (Government, Forest industry, etc).	1. Not lower than 80% of PNGFA officers, who received the training, improves understanding of PMCP and LCoP. 2. Not lower than 80% of timber company foresters, who received the training, improves understanding of PMCP and LCoP. 3. Documents on complying with PMCP and LCoP are developed and disseminated to project stakeholders.	1. Questionnaire 2. Questionnaire 3. Document on the programs and materials	There is no significant organizational and policy change in PNGFA.
2. The ability of stakeholders (Government, Forest industry, Landowners, etc.) to effectively carry out natural regeneration practice is improved.	1. User manual to manage natural regeneration is finalized. 2. Not lower than 80% of PNGFA officers and stakeholders, who receives the manual, improves their understanding of the manual's content.	1. Document on the training manuals 2. Questionnaire	

3.Field carbon monitoring procedures for logging operation are developed.	1.Methods for monitoring, recording, reporting or reducing emission level from logging operation are developed. 2.At least one training session for PNGFA field officers is organized to implement carbon monitoring. 3.Measures to promote the implementation of low emission logging are proposed. 4.Measures to reduce emissions from logging operations are proposed.	1.Document on the methods 2.Document on the training program 3.Document on the suggestion 4.Document on the proposal	Proper number of counterparts is secured through the Project period. The Project activities are not strongly rejected by stakeholders such as provincial governments, landowners and logging companies.
Activities		Inputs	
1.1 Challenges are identified through reviewing actual use of PMCP and LCoP, as well as information flow of logging activities. 1.2 Based on the review of the information organized in activity 1-1, examine and identify ways to strengthen PNG-FRIMS and utilize new technologies related to GIS and remote sensing to effectively promote sustainable forest management complying with PMCP and LCoP. 1.3 Set criteria for selecting pilot site(s) to undertake trials of the effective forest management complying with PMCP and LCoP, and determine the pilot site(s). 1.4 At the pilot site(s), test the technologies identified by the activity 1-2. 1.5 Identify effective way to disseminate PMCP and LCoP to the stakeholders, and provide necessary training for the PNGFA officers to conduct the dissemination. 1.6 Support PNGFA officers to disseminate PMCP and LCoP to timber company foresters. 1.7 Prepare programs and materials introducing outputs of the project and help PNGFA to disseminate the outputs to the stakeholders in workshop(s). 2.1 Find out issues for managing natural regeneration after logging. 2-2 Identify key stakeholders, and examine implementation structure and technical improvement measures for solving the issues identified in Activity 2-1. 2-3 Conduct pilot-activities on natural regeneration by PNGFA officers and key stakeholders at the pilot site(s) determined in activities 1-3. 2-4 Develop the draft user manual in cooperation with the key stakeholders. 2-5 Finalize the user manual to disseminate natural regeneration techniques to PNGFA officers and key stakeholders.	[The Japanese Side] <u>Experts</u> Chief advisor/Forest policies Coordinator Forest management Forest carbon monitoring Forest restoration Forest information /Measurement Training/Exit strategies Other experts necessary for the implementation of the Project <u>Training</u> •The Knowledge Co-Creation Program (KCCP) for Group and Region Focus: Proceeding Ability of Policy Making for Sustainable Forest •The Project Training in Japan: Sustainable forest management •Other training necessary for the implementation of the Project <u>Machinery and Equipment</u> •Vehicle(s) •Equipment for training and survey •Other equipment necessary for the implementation of the Project	[The PNG Side] <u>Counterpart Personnel</u> Project Director Deputy Project Director Project Manager Deputy Project Manager PNGFA technical staff Other supporting staff • Suitable office space with necessary equipment • Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other necessary materials • Admission card for the PNGFA building • Available data (including maps and photographs) and information related to the Project • Running expenses necessary for the Project transportation within PNG of the equipment as well as for the installation, operation and maintenance	

3-1 Review the effects of complying with PMCP and LCoP to low emission logging activities. 3-2 Identify indicators to assess low emission logging activities (e.g. Area for roads and log landings, damaged woods due to felling, etc.). 3-3 Identify and develop methodology for monitoring, recording, reporting or reducing emission level from logging operations through trials and validations in the pilot site(s). 3-4 Develop training program and provide necessary trainings to adopt carbon monitoring for PNGFA field officers. 3-5 Compile proposals to promote the implementation of low emission logging. 3-6 Compile proposals for forest carbon monitoring and reducing emissions from logging operations on the basis of the activity 3-1 to the activity 3-5. 3-7 Organize Workshop to disseminate the results of project activities.			<u>Pre-Condition</u> A budget required for PNGFA activity is secured by the PNG government. <u>Issues and countermeasures</u>
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