



TERMINATION EVALUATION REPORT

APFNet Project:
**Integrated Forest Ecosystem Management Planning and Demonstration Project
in Greater Mekong Sub-region (Cambodia)**



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ABBREVIATIONS AND ACRONYMS

APFNet	Asia-Pacific Network for Sustainable Forest Management and Rehabilitation
AWR	Water Retaining Agent
CCCSP	Cambodia Climate Change Strategic Plan
CF	Community forest
CFMC	Community Forestry Management Committee
CPA	Community Protected Area
ELC	Economic Land Concession
FA	Forestry Administration
GIS	Geographical Information System
GMS	Greater Mekong Sub-region
HHs	Households
IRD	Institute of Forest and Wildlife Research and Development, Forestry Administration of Cambodia
KHR	Khmer Riel
MAFF	Ministry of Agriculture, Forestry and Fisheries
NGO	Non-Governmental Organization
NSDP	National Strategic Development Plan
PDAFF	Provincial Department of Agriculture, Forestry and Fisheries
PSC	Project Steering Committee
REDD	Reducing Emissions from Deforestation and forest Degradation
RGC	Royal Government of Cambodia
SFM	Sustainable Forest Management
TE	Terminal Evaluation
ToR	Terms of Reference
USD	United State Dollar

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I also acknowledge the kind cooperation and support from the staff of the Institute of Forest and Wildlife Research and Development (IRD) of Forestry Administration (FA) for taking the roles of leadership, support, and coordination during the field mission. A special thank you to Dr. SOKH Heng, Director of IRD, and his Project Team for their support to project sites.

Finally, I would like to express my gratitude and appreciation to all stakeholders who were interviewed during the field mission. We appreciated their contributions and the facts and opinions they shared with us, played a critical part in the conduct of this evaluation. They provided valuable data and information to support and contribute to the successful fact-finding mission.

EXECUTIVE SUMMARY

The project “**Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Cambodia)**” aims to rehabilitate and enhance the ecological services and produce provisioning of forests in Cambodia through improvement of forest management capacities and introduction of advanced forest monitoring system, which all contribute to sustainable forest management in Greater Mekong Sub-region. It was funded by the Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet), implemented by Institute of Forest and Wildlife Research and Development, Forestry Administration of Cambodia (IRD). This project was implemented from June 2017 to June 2021 for 48 months’ duration, and extended to June 2022. The mid-term evaluation of the project was conducted in October 2020.

The terminal evaluation report was prepared by Mr. KIM Soben, the Director of Center for Agricultural and Environmental Studies, Royal University of Agriculture (RUA) between September-October, 2022. With the methodology of desk review, stakeholder interview and field site visit from 06-14 September 2022, the terminal evaluation find that the project is on track to meet its objectives, except the Activity 10.4 Participate in APFNet's project experience sharing activities due to Covid-19 travel restriction. Most areas are rated as Highly Satisfactory. It means that the project had achieved its objectives in terms of relevance, effectiveness and efficiency.

Conclusions:

- Forest restoration is difficult to work and it needs to integrate with different skills which includes environmental, social and economic consideration.
- Livelihoods improvement requires taking full account of the needs of local farms and increasing their motivation to participate in forest restoration activities.
- Based on the analysis of relevant strategies, the project design is significantly aligned with the APFNet’s objectives, and was highly relevant to APFNet Strategic Plan 2021-2025.
- Overall, the project is in a strong performance and on track to meet the development objectives originally laid out in the project document.

Recommendations:

Related to Project Design

- 1) The Project design should be considered with the timeframe of the implementation and fund available for the project. In case of agroforestry and home garden may take long time to benefit.
- 2) The project objectives shall be in conjunction with the project outcomes, outputs and constituent interventions.
- 3) The project design should be included a financial sustainability plan in order to keep track on the implementation of activities continuing.

- 4) Cost-benefit analysis activities are not designed during planning stage so that it is not easy to assess the feasibility of agroforestry/home garden practices or measures to improve community livelihoods accurately
- 5) The project management structure was rather centralised, with funds managed at national level and only light involvement of PDAFF or sub-national authorities at Province, District or Commune level. A more decentralised approach might have reduced costs for monitoring activities and might have resulted in greater local inputs to selection of appropriate activities (for example, tree and crop varieties) for each site.

Related to Project Implementation

- 6) Based on the experience from the project, forest watcher system was not working properly due to limited capacity from the project staff. Therefore, the continuous capacity building of project staff through on the job training with technical backing up from external expert. In addition, since most of forest area are not connected to the electrical grid, equipping high capacity of solar energy to run the system should be considered. The system in Tamao Zoo should be fixed by the supplier company as it is still in warranty period. This action should take immediately within the project implantation period.
- 7) Both agroforestry and home garden practices can increase farm production or income. Diversifying production, such as food, fiber, fodder, fruit, construction materials, medicine, and providing environmental services that help increase food security and improve household livelihoods can increase forest income. For long-term sustainability, linking the farmer who practice agroforestry and home garden with traders would be essential since the trades know well about the market demand while local community members know how to plant. Finally, the project should select more households based on their needs.
- 8) The species selection to be applied for agroforestry and home garden located inappropriate geographical areas. Both agroforestry and home garden technology proved to be effective in the increasing the production of farmers. The new spatial arrangement has optimized the canopy layer and could effectively utilize the space.
- 9) A triage nursery improved was moved to FA; however, the project should consider the volunteering activities from forest community to handle the management and operation of the nursery in the project site due to the CF members get benefit from conserving forest, they would be participated in nursery management. To do this, the project team should facilitate in establishing nursery management team and also provide some technical training to those villagers.
- 10) A monitoring on the vegetable changes should be conducted using state of the art technologies such as drones to see the landscape of the whole farming system.
- 11) Closer coordination can be made through frequent meetings using online meetings. This provide an inexpensive way of consulting the different actors remotely thereby minimizing the disturbance of the field staff from their works.
- 12) Designing restorations should consider the local knowledge of local experts. The community also need to be consulted on the appropriate species to plant in the area.
- 13) A home garden can potentially improve the condition of the farmers. The experience of the project has shown improvement of the farm plot of farmer cooperators who adopted

the home garden technology. This should be promoted as a practical approach in addressing poverty. To promote home garden, cost-benefit analysis should be conducted to understand the benefit from its productivity.

- 14) The partially degraded forests can be inter-planted with shade-tolerant crops, such as galangal to increase intermediate income. Other shade tolerant crops such as mushrooms (Ear Mushrooms), cardamom, arrow roots and other crops should be explored or tested.
- 15) The planted seedlings die due to climate condition (some seedling, species e.g. black peppers, Macadamia, Pomelo), hot temperature and lacking of water during dry season. The team dug a pond in order to store water for irrigating the plants. However, it still not worked enough due to most areas have no soil cover. Tree-planting in the restoration areas should use the rice-straw as a soil cover technique enhance the survival rate. This soil cover could help to maintain the soil moisture, reduce heat stress, and saving water.
- 16) Project dissemination should be organized with the participation from the public, not just only FA official and students.
- 17) Research papers should be conducted by students to understand more depth in forest restoration.

Lessons learned

- 1) Knowledge of technical aspects including burning rice straws and knowledge of soil erosion, different ecology function including peppers growing.
- 2) The government is making high efforts to protect forests, so it is right direction of implementing projects related to forest management and restoration including agro-forestry and home garden. To succeed in agroforestry and home garden, the project is required to prepare a farm plan and looking for a short future with the change of their farm in the form of landscape.
- 3) Appropriate technical application should be considered for forest restoration, the participation from local community is crucial for the success in forest restoration. The participation of local community members ranging from controlling land encroachment and preventing cattle to wander to the restoration site. Furthermore, protecting forest from fire is also important for community members since the forest fire was caused by local people after the harvesting season.
- 4) The results addressed to the identified problems including soil erosion and land degradation, but the selected proper technologies should be considered for local community in different ecological zones.
- 5) The introduction of water distribution system has provided significant economic impacts to the households. The households were able to improve their food security since they were able to grow some vegetables in their backyard.
- 6) The support of APFNet is necessary, particularly on the needs of the field. During the implementation, there were unexpected needs that needs support from APFNet, for instance, the farmer cooperators became disinterested on working with their home garden. The project needs to look for alternate site to test the home garden technology. The new farmer cooperators were very cooperative and experienced higher production when they tested the home garden technology. For the next project planning, the farmer needs assessment should be conducted to collect information from farmers, and selection

- should be made to avoid some farmer might not be interested in the project.
- 7) The Forest Watcher System showed a very promising technology. However, due to the COVID-19 travel restrictions, the company who provided the technology was not able to provide prompt aftersales support when part of the gadget broke down. The current alternate technology that can collect information from the field like drones can offer an alternate technology for field monitoring.
 - 8) There is a need to refer to the local knowledge of the community and Local Foresters in the design of the restoration, particularly in deciding the species to plant. It was noted that there was a low survival of the planted trees since some of the species were not suitable to the site. In the case of Agroforestry and Home Garden, exotic species macadamia and pomelo did not grow well.
 - 9) Intermediate income can be produced underneath the canopy of woodlots by planting appropriate shade tolerant cash crops. The initial result revealed that galangal can be grown under the woodlot by modifying the canopy.

I. INTRODUCTION

1.1 Project Background

The project of *Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region* are located in three provinces: Kampong Speu, Siem Reap, and Takeo provinces. The project site in Damrey Chakthlork Community Forestry (CF), Phnom Srouch District, Kampong Speu province aimed to demonstrate the different techniques for restoring degraded forests; the project site in the Damrey Chakthlork Community Forest (CF) in Dokpor village, Krangdeivay Commune, Phnum Srouch District, with a total area of 1,452 hectares, is selected to demonstrate the improvement of CF management through developing restoration technologies and demonstrating integrated management models; in Siem Reap and Takeo provinces, two sets of forest watcher system are installed and demonstrated in Khun Ream Forest Research Station and Ta khmao Zoo Forest respectively, through which a total of 4,368 hectares of state-owned forests is to be on-time monitored, so as to strengthen the conservation of state-owned forests. Moreover, the project also aims to test the Forest Watcher System, a state-of-the-art technology that can monitor the forest cover. The Forest Watcher System is expected to provide continuous monitoring and surveillance of the surrounding of the pilot state-owned forests and provide reference for decision-making on forest fire prevention, forest resources reservation, and biodiversity conservation in the country. The total budget is US\$1,792,663.60, of which APFNet's grant is US\$1,515,465.60 and counterpart contributions from FA and Community are US\$237,192.00 and US\$40,006.00, respectively. The objectives of the project include:

1. To develop a model for community forest management by strengthening CF management and testing appropriate restoration and silviculture technology;
2. To mitigate the dependence of the communities to forests by improving household farming systems;
3. To enhance forest protection through adopting an advanced forest monitoring system (Forest Watcher); and
4. To extend achievements and related techniques in Cambodia and GMS by demonstration and experiences sharing.

1.2 The Purpose of the Evaluation

A terminal evaluation (TE) is an important part of the APFNet project cycle. It is an independent evaluation carried out at the time of project completion with the purpose to provide a comprehensive and systematic account of the project performance. In accordance with the Guideline for APFNet project Monitoring and Evaluation, the TE has the following complementary purposes:

- Assess whether the goal(s) and objectives of the projects are met, summarize the achievements of the projects, identify issues/challenges and lessons learned from the projects;

- Provide evidence of results to meet accountability requirement;
- Analyze the achievements, impacts of the projects for better promotion and dissemination; and
- Give recommendations for future project planning, management and implementation.

This TE is expected to enhance organizational and development learning, enable informed decision-making, and create the basis for replication of successful project results. This TE is intended to provide evidence-based, credible, useful, and reliable information in producing a set of recommendations and lessons learned to help guide future design and implementation of APFNet projects.

II. EVALUATION SCOPE AND FOCUS

This evaluation usually looks at project planning, implementation and management comprehensively, it is a systematic and objective examination concerning the relevance, effectiveness, efficiency, impacts and sustainability of activities in the light of specified objectives. For the project “Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Cambodia) [2017P2-CAM]”, the TE is expected to cover the following project components:

- (1) Formulation of Community Forestry Management Plan;
- (2) Demarcation and patrol of Community Forestry boundary;
- (3) Improvement of a Forestry Administration triage nursery;
- (4) Establishment of restoration and silviculture models;
- (5) Establishment of village water supply system;
- (6) Establishment of agroforestry farming system;
- (7) Establishment of Home garden farming system;
- (8) Installation and maintenance of Forest watcher system and auxiliary facilities;
- (9) Assembling of an integrated forest management technology and formulation of a technical handbook; and
- (10) Demonstration and dissemination of experience and technology.

III. EVALUATION METHODS AND APPROACHES

The methodology used in this evaluation was discussed and agreed with the APFNet’ secretariat based on the original terms of reference (ToR). It was agreed to use an integrated qualitative-quantitative approach. Based on Analytical Framework defined in ToR, and after careful analysis of quantitative data, Evaluation Matrix (Annex 2) was constructed as a base for fieldwork and gathering of qualitative inputs for analysis.

The evaluation used the methodology and information acquired from the various sources/ methods outlined below and based on the process framework illustrated in Figure 1:

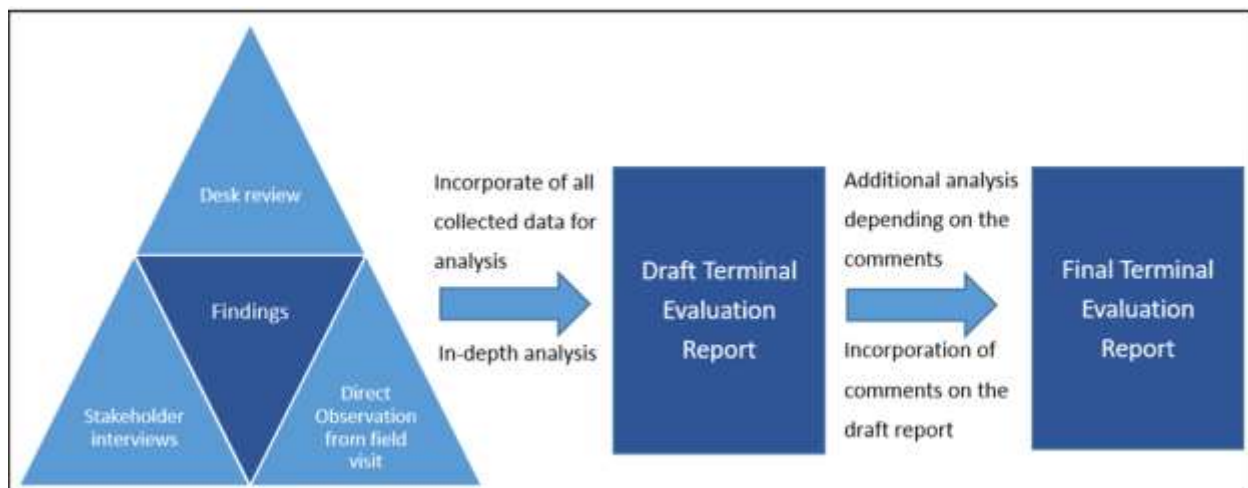


Figure 1. Basic Process Framework of the Terminal Evaluation

Source: Adapted from Guidance for conducting terminal evaluation of UNDP-supported, GEF-Financed Project (UNDP, 2012)

3.1 Desk Review

For this TE, the desk review plays an important step for acquiring project’s related information. The desk review had focused on a wide range of project’s documents such as, project design, project’s implementation, financial report, and project’s monitoring and evaluation including annual and quarterly progress reports, mid-term review, technical reports and other knowledge products emerging from the project. In addition, relevant national strategies, programs, and plans as well as APFNet’s strategy documents were referred to examine linkages and project relevance. A full list of all the documents that were reviewed for the TE is provided in Annex 4.

3.2 Stakeholder Interview

The stakeholder interviews were conducted in form of face-to-face consultations with a wide range of stakeholders, using “semi-structured interviews” with a key set of questions in a conversational format. The questions asked aimed to provide answers to the points described in each project outputs. Triangulation of results (i.e., the comparing information from different sources, such as documentation and interviews, or interviews on the same subject with different stakeholders) used to corroborate or check the reliability of evidence. The stakeholder interview has been conducted with: (a) project management team at Forestry Administration of MAFF in Phnom Penh, and Provincial Department of Agriculture, Forestry and Fisheries (PDAFF); (b) Damrey Chakthlork forestry community members and saving groups; and (c) water user groups. Each meeting for stakeholder interviews were conducted for one to two hours depending on the nature and amount of information to be elicited from them. A complete list of people who were interviewed, individually or in group, during the evaluation is provided in Annex 6.

3.3 Field Site Visit

Field visits are very important step for this project to check and verify the project’s result. For this project, site visit has been held from 06-14 September 2022 at Damrey Chakthlork Community

Forestry and Krang Devaiy Community Forestry located in Phnom Srouch district, Kampong Speu, Cambodia with project’s implementation team and community head and its members, to observe project activities first-hand through interaction with the local stakeholders. The project implementing team accompanied a TE consultant team to travel to the project sites to elicit first-hand information and insights from the local stakeholders. Beside visiting the demonstration area, the evaluation team visited the home garden of farmers and agroforestry farming system which are developed by the project for improving their livelihood.

3.4 Data Sources

A wide variety of documents covering project design, implementation progress, monitoring, amongst others:

- Project documents
- Completion Report 2022
- Report of Experiences from Restoration, Silvicultural Management and Installation of Forest Watcher System 2021
- Policy brief of Integrated Community Forest Management 2021
- Technical Handbook for the Technologies Used 2021
- Guideline for APFNet Project Monitoring and Evaluation
- Technical report on establishment, maintenance and monitoring of agroforestry and home garden 2018
- Community forestry development in Cambodia
- Technical guidance on restoration development models and maintenance and monitoring of the plot restoration for Damrey Chakthlork community forest, Kampong Speu 2018
- A report on current conditions of community forestry and its management
- Mid-term evaluation report
- Other relevant reports, documentation, assessments, etc.

3.5 Evaluation Criteria and Rating Scale

Terminal evaluation	A. relevance	<ul style="list-style-type: none"> a. Contribution to APFNet priorities, notably the projects’ priorities described in APFNet Strategic Plan; b. Conformity with forest priorities in project area(s)/target economy(ies); c. Linkage between project objectives, outputs and activities.
	B. Efficiency and effectiveness	<ul style="list-style-type: none"> d. Performance of project implementation <ul style="list-style-type: none"> a) Project achievements b) Specific project performance <ul style="list-style-type: none"> • each project activity

	<ul style="list-style-type: none"> • project financing • project consultancy • project dissemination
	a. Performance of project management teams
C. Impacts	b. Project impacts
D. Sustainability	c. Whether the impact has a potential to be applied to a larger area with similar PESC situation; d. Whether project activities can self-sustain without other funding resources or is able to seek other funding resources for follow-ups.
E. Duplicability	e. Whether the potential of project outputs (especially best models and best practices) could be scaled up to a larger audience.

Evaluative evidence has been assessed against the primary GEF¹ evaluation criteria:

- Ratings are provided on relevance, effectiveness, efficiency and results, based on the standard UNDP-GEF six-point ratings scale:
 - **Highly satisfactory/4:** The project embodies the description of strong performance provided below to a *very good extent*.
 - **Satisfactory /3:** The project embodies the description of strong performance provided below to a *good extent*.
 - **Moderate/2:** The project embodies the description of strong performance provided below to a *fair extent*.
 - **Unsatisfactory/1:** The project embodies the description of strong performance provided below to a poor extent.
 - **Highly unsatisfactory/0:** The criterion *was not assessed*.
 - **D/I:** The criterion was considered but *data were insufficient* to assign a rating or score.
- Ratings for sustainability are based on a four-point scale: Unlikely (U), moderately unlikely (MU), moderately likely (ML), and likely (L).

This TE follows the general rules for program evaluation, especially the **GEF Evaluation Criteria** as follows:

- **Relevance** - the extent to which the aid activity is suited to the priorities and policies of the target group, recipient donor, and national development priorities.
- **Efficiency** - the outputs (qualitative and quantitative) in relation to the inputs. It is an economic term that signifies the least costly use of resources in order to achieve the desired results.
- **Effectiveness** – the extent to which an aid activity attains its objectives.

¹ GEF (Global Environment Facilities), “The GEF Evaluation Policy”, Prepared by the Independent Evaluation Office of the GEF, 2019

- **Impacts** – the positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended. This involves the main impacts and effects resulting from the activity on the local social, economic, environmental and other development indicators.
- **Sustainability** - the extent to which the benefits of an activity are likely to continue after donor funding has been withdrawn.

IV. ANALYSIS AND FINDINGS

4.1 Project Objectives, Outputs and Achievements

Objective 1: To develop a model for community forest management by strengthening CF management and testing appropriate restoration and silviculture technology

Output 1. Community Forestry Management Plan formulated

The following are the key achievements of each activity under outputs:

Activity 1.1 Survey current conditions of CF and its management

- 1) The project is to manage community forestry by formulating an integrated CF management plan. The CF Management Plan was formulated to enhance CF management in Cambodia and the whole Lancang-Mekong Watershed. The field investigation has been made by the project team with the participation of a Chinese forestry expert. The field investigation report on the current condition of Community Forestry and its management in 2018 has been produced. In relation to the comprehensive understanding of forest conditions, management status, and willingness of the community forestry management, the CF management plan was formulated by using participatory approaches, particularly the group discussion with participation from various stakeholders and experts. CF Management Committee has been established in the community. The director is in charge overall management. Finally, the plan was approved by the expert and committee consisting of 11 members, including one director, one deputy director, one secretary, one finance personnel and seven members, and accepted by the local villagers. This activity's achievement is assessed as **Highly Satisfactory**.

Activity 1.2 Formulate and print CF Development Action Plan

- 2) In supporting this activity, 3 types of documents were produced in close cooperation among Chinese experts from Yunnan Academy of Forestry, IRD, local FA and community. Firstly, report was developed on current community forestry and its management. During the planning process, a full investigation of forest stands and land use has been carried out, while the existing regulation for the CF management are available, i.e., An Agreement on CF Management among villager, an Agreement on CF Management between local FA and the Community, and a CF Management Plan generated with the assistance from local FA. General strategies adopted for the improvement of CF management. Secondly, technical guidelines for restoration models. This report mentioned that all 4 models of reforestation give a integrated technical guidance for community forests in the region. To recover ecological functions and forestland productivity of community forest, the forest was classified into grades of degradation at first, and then species composition and stand structure adjusted through restoration and silviculture treatment. The CF is classified into 4 grades as follows: deforested area/open areas, severely degraded forest, moderately degraded forest, and

Dense forest. Thirdly, technical report is on establishment, maintenance and monitoring of agroforestry and home garden. Establishing an agroforestry model (1 ha of land area) by intercropping of high-value cash tree species such as macadamia trees with vegetables. Home-garden was selected a household for demonstration covers approximately about 0.5 ha. These documents were translated and distributed to CF members, the local forestry office, and local authority, and distributed during seminars organized by FA. Totally 300 copies were distributed. This activity's achievement is assessed as **Highly Satisfactory**.

<i>Output 1's Achievement Rating</i>	<i>Highly Satisfactory</i>
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Output 2: CF boundary demarcated and patrolled

Activity 2.1 Make and Install Poles and Billboard

- 3) The project supported the CF to implement its plan to establish poles and billboards in accordance with its CF Management plan. The project produced and posted 100 concrete poles and installed them in the parts of the CF area that are vulnerable to encroachment, 4 billboards were established, and 3 agroforestry and home garden signboards in a village and entry to CF areas. In contrast, the project installed 6 billboards at the community forestry entrance and forest restoration plots. 40 signboards were produced and installed around forest restoration plots. The purpose extended the APFNet goal, and objective as well as the integrated forest ecosystem management planning and demonstration project to CF members and people who passed by the project area. The signboard presented the APFNet's goal and objectives of the project shown in the restoration areas. The CF members or people who live nearby the village or passed the project area understood the project. This activity's achievement is assessed as **Highly Satisfactory**.

Activity 2.2 Patrol the CF

- 4) The results from the interview with the community leader, the patrolling team composited of 5 teams and 15 sub-team also formed, and 1 team consisted of 45 community members. 30 patrolling teams were formed (450 community members, 64 females); and 2 guardhouses were constructed and used by the patrolling team as shelter and meeting places. The constructed guardhouse measures (5m* 6m) made from iron, roof with zinc. The guardhouse serves as the shelter for the Patrol Team during the rainy season and a resting area during patrol operations. The CF patrol team conducted regular patrolling activities throughout the implementation of the project. During the patrol operations, there were only minor disturbances of the CF that were noted, such as the occasional cutting of trees for firewood. The CF conducted early actions of the patrolling activities. The CF members take turns in conducting patrol work, especially during summer since the CF members are concerned about forest fires.
- 5) Most of the forest fires are caused by farmers who burned their rice fields during site preparation or after harvesting season in the areas. During the rainy season, the CF patrol team is more concerned about stray animals. During the course of implementing the project, there were no significant forest fires happened. But the patrol team made three

apprehensions in the first and second years of the project operation. Among these 2 cases were informed to the local forestry administration. After that, there are no recorded illegal cutting. The CF members now asked permission from CF Management Committee when they need poles or collect dead trees.

This activity's achievement is assessed as **Satisfactory**.

Output 2's Achievement Rating	Highly Satisfactory
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Output 3: A FA Triage nursery improved

Activity 3.1 Improve FA Division nursery

- 6) Since the first year of operation, the project has completed the improvement of the Division nursery located in Boseith Forestry Administration division and produced the seedlings needed for the restoration. Before, the FA Triage nursery produced limited number of seedling annually by the government budget and the nursery capacity. In the fourth year, the project constructed a nursery in Krang Deivay CF following the recommendation of the External Evaluator last October 2020 to produce more seedling for planting in the restoration areas. The constructed nursery measuring 54 sqm (6m x 9m) made of metal frames and covered by green nets. The seedlings produced are mainly rosewood, Dipterocarp species, and bamboo, the nursery consisted of around 1,500 seedlings. The IRD staffs discussed with the 2 FA local staffs who manage and coordinate the FA division nursery and agreed to improve some part of the division nursery to produce seedlings. Triage nursery was replaced by FA Division nursery and was renovated 100% completed including repair of the roof, fence, nursery beds, irrigation system, and pond restoration. The FA Division nursery, measuring The 180 sqm (9m x 20m) the same size, but the working space has been improved and has fixed the shade, and increase seedling production where accommodated approximately 12,000 seedlings.
- 7) However, the nursery was moved to the institute of Forest and Wildlife Research and Development in Phnom Penh due to lacking labor force to take care the seedling produced and management team. Even though it was moved, the activities under this output still worked well. The nursery provided sufficient seedlings to the projects and planted them in the target areas.

This activity's achievement is assessed as **Satisfactory**.

Activity 3.2 Raise seedlings in the nursery

- 8) The nursery facility of the FA triage was improved with 11 species including *Pterocarpus macrocarpus*, *Dalbergia cochinchinensis*, *Dalbergia oliveri*, *Tectona grandis* and *Cassia siamea* and fruit trees were also recommended to be raised in the nursery. The total number of seedlings produced was 14,200 in FA nursery. The purpose of the production of seedlings is for plantation in CF, replanting, and for distribution. The seedling was distributed were higher than a number of seedling produced as died and continued to replanting, and they were used to grow in the four type of restoration areas. The nursery helped in the seedlings dispersal program of the government. The seedlings produced are as follows:

Table 1. Number of seedlings produced in FA nursery

Species	No. of Seedlings Produced	How these are Used/ Distributed
Year 1- Year 3		
<i>Dalbergia cochinchinensis</i>	1,500	2,834 seedlings
<i>Pterocarpus macrocarpus</i>	1,300	2,834 seedlings
<i>Dalbergia oliveri</i>	1,000	1,089 seedlings
<i>Sindora cochinchinensis</i>	1,400	
<i>Cassia siamea</i>	7,000	20,000 seedlings
<i>Azelia xylocarpa</i>	500	Distributed
<i>Anisoptera costata</i>	500	Distributed
<i>Delonix regia</i>	400	Distributed
<i>Lagerstroemia floribunda</i>	500	Distributed
Lemon	50	Planted in AF
Mangoes	50	Planted in AF

9) There was a total number of 4,095 seedlings produced CF nursery. The CF produced 3,800 *Dalbergia cochinchinensis*, 100 *Azela xylocarpa*, 120 *Dalbergia bariensis* and 75 bamboos. The purpose is to produce seedlings for plantation in CF, agroforestry and commercial. 300 seedlings planted in CF area (200 *Dalbergia cochinchinensis*, 50 *Azela xylocarpa* and 50 *Dalbergia bariensis*). The nursery was lately built last year, so the seedling is not insufficient for plantation and distribution. Originally, the production of seedlings in the CF was not in the project document. The seedling production was in compliance with the recommendation of the External Evaluator to strengthen the capacity of the CF to produce seedlings during the project mid-term evaluation.

Table 2. Seedlings Produced in CF nursery

Species	No. of Seedlings Produced	Use of the Seedlings / Distributed
<i>Dalbergia cochinchinensis</i>	3,800	Planted at the CF=200 Distributed=3,600
<i>Azela xylocarpa</i>	100	Planted at the CF=50 Distributed=50
<i>Dalbergia bariensis</i>	120	Planted at the CF=50 Distributed=70
Bamboos	75	Distributed=75
Total	4,095	Planted at the CF=300 Distributed=3,795

10) One training of CF on seedling production was conducted to involve topics on seedling production, treatment, compost making, nursery arrangement, and maintenance. The

training was conducted for 3 days by IRD staff who have experience in seedling production, collection, and storage involving both theory and hands-on. The participants of the training are CF members and the local forestry administration officers and were conducted in Dokpor village, Kraing Devai Commune. The training entitled “Training of CF on Seedling Production” was recommended by the External Consultant during the evaluation of the project. This activity’s achievement is assessed as **Satisfactory**.

Output 3’s Achievement Rating	Satisfactory
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Output 4. Restoration and Silviculture Models established

Activity 4.1 Design and prepare soil for 3 types of degraded forestlands

- 11) The project completely developed 1 planting design guideline namely “Technical guideline on restoration development models and the maintenance and monitoring of the pilot restoration plots” for Damrey Chakthlork Community Forest in Kampang Speu. The restoration area was classified into 4 zones of degraded forestlands: (1) Open Area; (2) Severely Degraded Area; (3) Moderately Degraded Area; and (4) Dense forests. Based on the classification, the restoration and silviculture models were developed by using different tree species and technologies. A trial of 16 hectares was identified. Each treatment covered 4 hectares, in which about 1000 m² were remained as a control. Relevant techniques were tested and developed corresponding to current conditions of each type of forestland. Restoration of deforested area/open area were planted with native valuable timber tree species of *Pterocarpus macrocarpus*, *Dalbergia cochinchinensis*, *Dalbergia oliveri*, and *Tectona grandis*. Each tree species is planted with a total area of 4 blocks. Planting density for above tree species is 2×3 m, 3×3 m, 3×3 m, and 3×4 m, respectively. Firewood plantations were practiced in Severely Degraded Forest using tree species of *Cassia siamea*. The dominant tree straight trunks in the tree layer, while the small trees, shrubs and weeds under remant trees were cleared out. The size of pit for planting is 40×40×30 cm. The density for planting is 1×2 m. The restoration of moderately degraded sites planted pepper and other rosewood tree species such as *Pterocarpus macrocarpus* and *Dalbergia cochinchinensis*. The seedlings of premium timber (*Dalbergia* and *Pterocarpus*) were planted at 4m x 4m. Black peppers were planted in cluster under the forest, with a density of 200-300 clusters per ha, and 3-5 seedlings per cluster. Dense forests were planted overly crowded or clustered trees such as *Dipterocarpus*, rosewood tree species, etc., and they were thinned, and root sprouted suckers of *Dipterocarpus* species was conducted tending. For enrichment planting in forest gap, tree species such as *Pterocarpus macrocarpus*, *Dalbergia cochinchinensis*, and *Dipterocarpus* species were also planted in the dense.
- 12) Based on the landscape situation and in line with the criteria mentioned above, a number of total tree species of *Pterocarpus macrocarpus*, *Dalbergia cochinchinensis*, *Dalbergia oliveri*, *Cassia siamea*, *Tectona grandis*, *Dalbergia bariensis*, *Dipterocarpus intricatus* and *Dipterocarpus obtusifolius* were selected for restoration and silviculture treatment. During the implementation of these activities, the project team faced challenges with a forest fire and lack of water for irrigating seedlings. As a result, the team constructed the fire break and stabilize the pond to minimize the risk which was closed to the restoration area. This activity’s achievement is assessed as **Highly Satisfactory**.

Activity 4.2 Plant and maintain restored forests

- 13) The restoration plots cover an area of 12 hectares representing three types of degraded forestland in the community forestry, namely deforested area, severely degraded forest, and moderately degraded forests, to restore and plant approximately 27,573 seedlings. The planted seedlings include *Pterocarpus marcrocarpus*: 2,834 seedlings; *Dalbergia cochinchinensis*: 2,834 seedlings; *Dalbergia oliveri* 1,089 seedlings; *Sindora cochinchinensis*: 900 seedlings; *Cassia siamea* and *Albizia lebbbeck* 16,500 seedlings. Currently, the seedlings are being mostly 1.20m to 4m. The Degraded/Open, Moderately and Severely Degraded Plots were replanted using the ordinary seedling method. The sample plot monitoring plan was applied on the performance. Each treatment covers 4 hectares, in which about 1000 m² are remained as a control. Each treatment had three replications. One 20m*20m monitoring sample plot was set in every replication to determine the sample plant increment index yearly since 2018, and the sample plot's species richness index and soil physical and chemical properties in 2018 and 2021 respectively. According to inventory in 2017, three 20m*20m fixed monitoring sample plots randomly in every tree species plantation area, and every tree species has three fixed sample plots, totally 21 fixed sample plant. The 21 fixed monitoring sample plots are set for seven tree species. Increment indexes like tree height, DBH (diameter at breast height), crown breadth, under crown height, volume of wood, etc. were measured every year since 2018. 6 species were planted in restoration areas and 24,157 seedlings were planted. The seedlings are now 1m to 4m with a survival of approximately 56 percent due to extreme temperature and replanting Open Areas using Miyawaki Method (Seedlings). Seeds planting should be in rainy season with high survival rate, and faster growing compared to dry season.
- 14) The tending/weeding of plants was maintained in the replanted areas throughout the duration of the project. It also applied a water retaining agent (AWR) for irrigating the plants. The water-retaining agent was brought from China and provided by Chinese experts. One water tank was installed for the irrigation system to water seedlings. Watering was conducted in land area covered 12 ha, however, watering was applied only during summer, particularly open or degraded areas as the areas had more space than other types of restoration areas. Around 45 percent of seedlings were watered due to lacking of water. The watering was conducted twice a day from February to May. Due to regular watering during summer, the seedling survival has increased. The project applied NPK (20-20-15TE) and (18-46-0) to the 12 hectares. Each plant was applied with approximately 100-200 g of mixed fertilizers. To increase water demand for seedlings, two ponds (20m*20m*3m) were constructed in the second year and in the third year. Each pond has the capacity to store water of around 500 m³. 1 km of drainage canal was constructed in the restoration site and 12 km of fireline was constructed/maintained with the width of the fireline is 5m. The fireline was constructed around restoration areas, and a 1 km of restoration fence was maintained and repaired. This activity's achievement is assessed as **Satisfactory**.

Activity 4.3 Clear, plant and tend in dense forest

- 15) There were 4 ha of forestland maintained where the CF members conducting maintained the dense forest. The project conducted thinning and tending activities by removing poor quality tree species (crooked, damaged, or non-commercial species and grasses) to improve the tree

quality and encourage the potential crop trees to grow. A 4-hectare dense forest and a density was 3-5 seedlings per cluster, which was planted and restored with about 2,000 seedlings. These include 1,000 *Dalbergia cochinchinensis*, 500 *Pterocarpus macrocarpus*, and 500 *Dipterocarpus intricatus*. The tree heights are now approximately 0.60m to 2.0m with a survival rate of 56 percent due to extreme temperature and lack of water in dry season. This activity's achievement is assessed as **Satisfactory**.

Output 4's Achievement Rating	Highly Satisfactory
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Objective 2 To mitigate the dependence of community to forests by improving household farming systems

Output 5. Village water supply system established

Activity 5.1 Stabilize pond dike and install pumping facilities

16) The project installed a 14HP water pump engine to run the water pump by the CF members and 1 pond is stabilized by using grasses and *Cassia siamea* in stabilizing the pond dike. Water supplies were identified as a major constraint for the community forestry and the project responded with a substantial programme of water supplies installations including ponds and household rainwater harvesting. These have mainly been successful and highly appreciated by the beneficiaries. This activity's achievement is assessed as **Highly Satisfactory**.

Activity 5.2 Lay out main water pipe from the pond to the village

17) There was one water tank supported by a concrete tower was constructed and installed, and the main water pipes were laid out. The water tanks were filled by pumping water from the pond nearby. The main water line connected from the water tank to the cluster of houses spanning a total of 2km. The individual houses were then connected from the main pipes. There are 51 individual households were connected by the water system. The water pipes are approximately 2,000m of main pipes (100 mm diameter). The pond dike was stabilized by planting Thailand acacia (500 seedlings) in order to avoid its deterioration and breakdown. After constructing the water tank and pipes, the project organized the water user group. 5 water user groups were created in order to use the water efficiently and effectively. The members elected their officers and formulated their internal rules. The water user group has implanted the work by themselves in coordination with the CF Management Committee. The output is rated as highly satisfactory as many villagers accessible to the water through the pipe and they expressed their high satisfaction with the project activities. This activity's achievement is assessed as **Highly Satisfactory**.

Output 5's Achievement Rating	Highly Satisfactory
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Output 6. Agroforestry farming system established

Activity 6.1 Prepare soil, irrigation facilities and seedlings (including import)

18) Mr. Soung Van a famer in Dok Por village, Krang Deivay commune of Damrey Chakthlork Community Forestry was selected to participate in the project to demonstrate the agroforestry farming system. The site was selected to establish an agroforestry model by planting different plants such as bamboo, cashew, Macademia and different type of

vegetables for short term harvesting. Up to date, the bamboo and cashew nut are too small amount for his family to improve likelihood. This activity aims to improve household income and soil improvement, tree species collection, and intercropping patterns. However, the project could also introduce. This activity's achievement is assessed as **Highly Satisfactory**.

Activity 6.2 Plant and maintain cash trees and vegetables

- 19) One irrigation facility was completely installed by the project including a pool and water tower to prepare for applying an agroforestry farming system. A total area of 1.2 hectares was selected to develop an agroforestry farming system. The planted trees in the agroforestry sites include exotic species from China (Macadamia and Pomelos) and other native cash trees such as mangoes, cashews, limes, bananas, bamboo, and other cash crops. They also planted rice during the wet season. This system is to establish an agro-forestry model by intercropping high-value cash trees such as Macadamia with vegetables. Nitro-fixing species were planted and soil preparation was also important to increase productivity of degraded land by reducing soil erosion, and increase yields, In the last 2 years, cashew start to bear fruit and are expected to increase the fruits by next year. Currently, the price of cashew nuts is around \$1.5 per kilo in the village.
- 20) Since the AF technology was conducted, soil erosion decreases. This output was completely achieved and provides benefits to farmers for livelihood improvement. It is rated as satisfactory as the farmers expressed their strong interest and happy with the result of the agroforestry farming system. Agroforestry worked in progress due to vegetables were harvested, and some cash trees have not yet been harvested. Finally, the system has developed and get some income and reduced land degradation in the area. This activity's achievement is assessed as **Satisfactory**.

Output 6's Achievement Rating	Highly Satisfactory
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Output 7. Home garden farming system established and maintained

Activity 7.1 Prepare soil, irrigation facilities and seedlings

- 21) One site of home garden farming developed in the CF. This system was firstly introduced at Krang Devaiy commune where the community forestry exists. While implementing few months, the project team found that the survival rate was low and condition of growing was difficult because severe drought during dry season and low soil fertility. The project team moved home garden activity to Krang Serey commune with the approval from APFNet's secretariat. The new location has sufficient water and rich soil fertility. Within this output, 2 farmers were selected to pilot home garden activities to improve land productivity and increase income of farmers. This activity's achievement assessed as **Satisfactory**.

Activity 7.2 Plant and Maintain Cash Trees and Peppers

- 22) There were 2 HHs that cooperated with the project. Their combined farm plot is 6,152.5m². The crops planted were Pomelo, Macadamia, oranges, bananas, and cash crops. In the first site in Krang Deivay commune, the farmer planted cash trees and peppers for Home Garden, the farmer did not tend his home garden because he became busy working in a private company outside their village. With the approval from APFNet's secretariat, there are 2 farmers who developed their farms for home garden in Krang Serey Commune: (1) Mr. Long

Him with an area of 3,815.5 sq.m. and (2) Mr. Prak Koun with an area of 2,337 sq.m. Their plot was planted with cucumber, celery, string bean, lettuce, water melon, tomato etc. The planting materials were provided by the project. The farmer cooperators were able to harvest 400 kg- 700 kg/month and they earned income \$350 to \$750/per month. Cash tree and vegetables were planted and maintained with water tank and pipes installation. The project introduced cash tree tolerant in that area. The system currently is working well and farmers are very satisfied. Their livelihood was improved accordingly. Maintain cash trees and peppers in Home Garden in the Krang Deivay commune was discontinued after the farmer expressed disinterest to maintain his farm and changed his career/focus on other business. In Krang Serey Commune, the farmers maintained their home garden throughout the project implementation and express continuation after the project termination. Woodlot was established and maintained in the farm of Mr. Neang Nem who is a CF member. The woodlot is approximately 7,433 m2. Seven strip lines were established, where the undesirable trees were thinning and inter-planted with galangal, turmeric, and Chinese ginger. Currently, the crops grow well, even if poorly maintained by land owner. Due to lack of market, the farmer did not harvest the crops for marketing but only used it for own consumption. To address this challenge, a selected high-value crops were planted to meet market demand at the local level. In addition, market-oriented should be established for products from the households. In the thinned plot, the remaining indigenous trees are growing well compared to the non-thinned plots. This activity's achievement assessed as **Moderate**.

Output 7's Achievement Rating	Satisfactory
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Objective 3: To enhance forest protection through adopting advanced forest monitoring system (Forest Watcher)

Output 8. Forest watcher system and auxiliary facilities installed and maintained

Activity 8.1 Survey, design and construct auxiliary facilities

23) Two sites were surveyed to identify and locate the forest watcher. The two sites for the Forest Watcher System were completely set up: (1) Tamao zoo, Takeo; and (2) Khun Ream, Siem Reap. The project focuses only on maintenance of the forest watcher system in Khun Ream Research Station and in Tamao Zoo. There was an error occurring at Tamao Zoo and the secretariat has contacted with the technician to repair. After repair for about two months, it still did not work well; however, this was a technical issue that the government officials who were in charge this forest watcher should be built capacity in a sustainable manner. However, there was no data or report provided during the mid-term evaluation. This activity's achievement is assessed as **Highly Satisfactory**.

Activity 8.2 Deliver and install forest watcher system

24) The external expert constructed and installed forest watcher system in project site. A test run was conducted to collect data of its surrounding area. However, there was no monitoring data made considering that a gadget of the forest watcher system in Tamao Zoo was broken and there was no replacement made yet by the FA due to the high technology and it needed the technical assistance from the Chinese company. In Khun Ream, the Forest Watcher system was operated only occasionally when the power generator operates since there are no electricity in the area. It could be an alternate technology to applying drone to collect

information from the field morning, but it also needed technical support and financial support from the government when the project is terminated. For future project planning, the site should be the equipment with strong capacity of electricity. This activity’s achievement is assessed as **Satisfactory**.

Activity 8.3 Test system, train personnel, and process data/images

25) The expert provided training and coaching to the FA personnel. Four forestry administration officials were trained in China for forest watcher system management: 2 from IRD (Mr. Seab Kimsrim, Mr. Sreng Sineath), and 2 from Tamao zoo (Mr. Preap Socheat and Mr. Ok Kroy). The forest watcher system management trained by the Chinese forest watcher company. This activity’s achievement assessed as **Satisfactory**.

Activity 8.4 Maintain and repair the watcher system

26) The forest watcher system is a new technology to Cambodia, particularly for the project staff who still need the continuous support from the external expert to run this activity smoothly. It is not working properly due to limited capacity from the project staff. The continuous capacity building on-the-job training could be done by online platform, but the real practice also need for the staff who were in charge of the equipment. If they were given opportunity to study a short course for this specific skill could be worked well. However, due to restriction travelling during Covid-19 pandemic, the data collection from the forest watcher system was limited. Finally, the forest watch system played an important role in forest protection, but the technology was not applied in other areas of Cambodia. This should be strongly support to replicate more widely in other protected areas. This activity’s achievement is assessed as **Satisfactory**.

Output 8’s Achievement Rating	Satisfactory
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Objective 4 To extend achievements and related techniques in Cambodia and GMS by demonstration and experiences sharing

Output 9. An integrated forest management technology assembled and a technical handbook formulated

Activity 9.1 Summarize technologies of CF restoration and silviculture and experiences of forest watcher construction

27) One CF restoration and silviculture and experience of forest watcher construction handbook was published, namely “Experience from Restoration, Sivilcultural Management and Installation of Forest Watcher System”. This report aims to summarize relevant technologies based on activities carried out and experience of the project. The technologies implemented by the project include restoration of degraded community forest, establishment of agroforestry and home garden farming system, as well as a document of experiences of installing and operating forest watcher system. The project printed 50 copies each based on project work plan. Some of them were distributed to participant during any GMS workshop organized by FA. This activity’s achievement assesses as **Highly Satisfactory**.

Activity 9.2 Formulate technical handbooks for integrated CF management and for the watcher operation

- 28) Formulate technical handbooks for integrated CF management and for the watcher operation, namely “Technical Handbook for the Technologies used by the project”. The project printed 60 copies (20 copies each) of the handbook. These were distributed to the FA official and stakeholders. This activity’s achievement assesses as **Highly Satisfactory**.

Output 9’s Achievement Rating	Highly Satisfactory
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Output 10. Experience and technology demonstrated and disseminated

Activity 10.1 Organize workshops and field visits of domestic foresters

- 29) The workshop of sharing experience of management forest fire monitoring (Forest Watcher System) organized through Zoom Meeting by the Institute of Forest and Wildlife Research and Development (IRD) on 13 June 2022, with a total of 30 personnel.
- 30) A workshop on sharing experience of management forest fire monitoring (Forestry Watcher System) organized by IRD-FA held on 17 June 2022. The purpose of the workshop was to disseminating and sharing of project progress output, experiences and lesson learnt for 4 years (2017-2021) of project implementation with 47 participants from the National and sub-national FA, community forestry committees, university professors and students who involved in project areas.
- 31) A field visit was conducted on 18 June 2022 with 42 participants to Forest demonstration plots and agroforestry site in Damrey Chakthlok, Dokpor village, Kraing Deywai commune, Phnom Srouch district, Kampong Speu province. The purpose is to lead the National and Sub-national forestry administration officials and universities student to studies and learned the methods of planting, restoring and managing forests and the implementation of home gardens in Damrei Chakthlok community forestry.
- 32) A field visit was organized on 23 June 2022 by the project with total 35 participants from Forestry Administration officials, university professors and students to visit in restoration areas and home gardens in Siem Reap. Among the lessons learned from the field visit is the need to learn the customs of the people, the weather as well as the soil properties, suitable crops, and land suitability before developing the site for home garden. The project could consider plants or crops that suitable to drought-prone areas. The participants were brought to Khun Ream Research Station in Siem Reap to observe the application of the Forest Watcher System.

This activity’s achievement assesses as **Highly Satisfactory**.

Activity 10.2 Publish a Book of CF Development in Cambodia

- 33) One Book of *Community Forestry Development in Cambodia* was written and published by Yunnan Academy of Forestry and Grasslands. The purpose of the books is to provide a comprehensive information on community forestry development in Cambodia and the experience of implementing silviculture, agroforestry and home garden. The documents were distributed to FA official and university students. This activity’s achievement is assessed as **Highly Satisfactory**.

Activity 10.3 Draft and submit a policy initiative of CF management to FA

34) A policy brief for integrated community forest management was produced and submitted to FA. A policy brief provides information for policy maker for forest rehabilitation in the integrated forest management. And to apply different models and technologies used by the project in other areas based on the context of community forest. A total of 90 copies were distributed to participants during workshop. These document were distributed to FA official and university students. This activity is assessed as **Highly Satisfactory**.

Activity 10.4 Participate APFNet's project experience sharing conferences

35) Participating of conference to present the APFNet’s project experiences (Activity 10.4) was canceled. The project staff was not able to attend any conferences to present the experience of the GMS project due to the travel restrictions imposed by the government at the height of COVID 19 pandemic. A permission was approved by APFNet to revise the target. This activity assesses as **Moderate Satisfactory**.

Output 10's Achievement Rating	Highly Satisfactory
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Based on the above assessment of project outcomes and output achievement, the overall achievement of the project results can be rated as *satisfactory*. The breakdown of individual outcome and output ratings are shown in the table below.

Table 3. Ratings of Achievements of Outcomes and Outputs

Ratings of Achievements of Outcomes and Outputs

Output/outcome	Rating				
	HS	S	M	U	HU
Output 1: Community forest management plan formulated	√				
Activity 1.1 Survey current conditions of CF and its management	√				
Activity 1.2 Formulate and print CF management Plan	√				
Output 2: CF boundary demarcated and patrolled	√				
Activity 2.1 Make and install poles and billboard	√				
Activity 2.2 Patrol the CF		√			
Output 3: A FA Triage nursery improved		√			
Activity 3.1 Improve Triage nursery facilities		√			
Activity 3.2 Raise seedlings in the nursery		√			
Output 4: Restoration and silviculture models established	√				
Activity 4.1 Design and prepare soil for 3 types of degraded forestlands	√				
Activity 4.2 Plant and maintain restored forests		√			
Activity 4.3 Clear, plant and tend in dense forest		√			
Output 5: Village water supply system established	√				
Activity 5.1 Stabilize pond dike and install pumping facilities	√				
Activity 5.2 Lay out main water pipe from the pond to the village	√				
Output 6: Agroforestry farming system established		√			

Activity 6.1 Prepare soil, irrigation facilities and seedlings (including import)	√				
Activity 6.2 Plant and maintain cash trees and vegetables		√			
Output 7 Homegarden farming system established		√			
Activity 7.1 Prepare soil, irrigation facilities and seedlings		√			
Activity 7.2 Plant and maintain cash trees and peppers			√		
Output 8: Forest watcher system and auxiliary facilities installed and maintained		√			
Activity 8.1 Survey, design and construct auxiliary facilities	√				
Activity 8.2 Deliver and install forest watcher system		√			
Activity 8.3 Test system, train personnel, and process data/images		√			
Activity 8.4 Maintain and repair the watcher system		√			
Output 9: An integrated forest management technology assembled and a technical handbook formulated	√				
Activity 9.1 Summarize technologies of integrated CF management and experiences of watcher construction	√				
Activity 9.2 Formulate technical handbooks for integrated CF management and for the watcher operation	√				
Output 10 Experience and technology	√				
Activity 10.1 Organize workshops and field visits of domestic foresters	√				
Activity 10.2 Publish a book of Community Forestry Development in Cambodia	√				
Activity 10.3 Draft and submit a policy recommendation of CF management to FA	√				
Activity 10.4 Participate in APFNet's project experience sharing activities			√		
Overall rating of achievement of project results		√			

Note on ratings: HS: Highly Satisfactory; S: Satisfactory; MS: Moderately Satisfactory; U: Unsatisfactory; and HU: Highly Unsatisfactory.

4.2 Project Design and Relevance

4.2.1 Project Design

- 36) The project was initially designed to support implementation of forestry law in Cambodia. This project was also designed to develop the capacity of the Forestry Administration of Cambodia and local communities on the forest management and restoration of biodiversity's functions. The project is located in Prek Thnot, which is one of the watersheds that have the high risk of impairment of its watershed function. Illegal cutting of the forest areas, particularly those adjacent or within the Cardamom Mountains; Fuel wood and charcoal industry; expansion of farms and agro-industries. The poor soil conditions of many small holder farms and Economic Land Concession (ELC) contributed to soil erosion; and settlers migrating from the nearby districts within Kampong Speu province and from other provinces.

Therefore, this project supported to overcome the current challenges of forest fire, illegal logging, and hunting, land encroachment, grazing, and pests and disease.

Project Design Rating	Highly Satisfactory
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4.2.2 Quality of Project Design

A systematic review of the quality of the project design was presented in the progress report. Based on this review, the quality of the design was assessed as *Satisfactory*

- 37) The presentation of the design in the project design document could have been clearer, together with the design of implementation plan that is clear to the implementers. This results in repetitive descriptions of the proposed project interventions in different parts of the document, while having some key elements of the project logframe, stakeholder analysis and risks. The project design quality assessment is based on the design document. It is noted that some of the weaknesses identified including the site selection for home garden, where the first household who applied home garden failed to adopt the technology. The project results framework could not address the clear monitoring and follow-up actions. Additional indicators were adopted at Objective and Outcome levels, and a number of adjustments were made to output indicators and targets.

4.2.3 Implementation Approach

- 38) This project has a clear implementation approach by integrated implementation plan as stated in proposal. Conserving the forests upstream is very critical since the rivers and surface runoffs drains towards Phnom Penh. At the southeastern part of Prek Thnot watershed also locates some rice producing areas that depends on the water coming from the tributaries of Prek Thnot. The project implementation approach addresses areas to be improved while building on and filling gaps in essential baseline areas in order to achieve the project objective and contribute to the long-term objective. To implement the activities according to the work plan, the project team was briefed on the project work plans. The project team was required to develop monthly and quarterly work plans. Regular meetings were conducted with the project staff to reflect on the progress of the project and the challenges encountered in the field. The meeting was held to come up with appropriate solutions. As planned, there are some unexpected events in the field that requires some adjustments on the work plan. The budget was also adjusted and reallocated to other activities with the approval of APFNet. Despite the adjustments, all the targets were achieved including the additional targets.

Project Implementation Approach Rating	Highly Satisfactory
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4.2.4 Logical Framework

- 39) The project implementation approach/plan was clear, the logical framework (log frame) was developed to follow up the activities implemented and appearing the exact indication in order to verify if the project had achieved as planned. This case made easier for project monitoring and evaluation.

Project Logical Framework Rating	Satisfactory
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4.3 Project Implementing Arrangement

4.3.1 Stakeholder Participation

Six broad groups of project stakeholders can be identified:

- 1) APFNet played a key role in supporting the project progress, management and monitoring progress up to date for both financial and technical aspects.
- 2) Institute of Forest and Wildlife Research and Development: To set up a Project Offices led by Project Manager, provide in-kind donations for the project, supervise the launching of local project activities and make sure of smooth project implementation and follow-up activities. The Project Manager is appointed by the Executing Agency in consultation with APFNet;
- 3) Local Forestry Administration: Provide policy, in-kind and personnel support for project implementation;
- 4) Local community: Major participants and beneficiaries of the project. In this project, community participation was divided into two levels: a) the full participation of the forestry community, and community village representatives. The project adopted a bottom-up approach. Under the guidance of the project staff, all villagers are called upon to participate in the project activities, and the consensus opinions reached by the villagers for extensive discussion, negotiation and voting are directly incorporated into the project planning and design, implementation, monitoring and evaluation. The elected village representatives have been invited to participate in the project working group, and fully participated in the entire project implementation process and its specific work. b) the villagers were voluntarily participated in the project.
- 5) Project full-time staff: The project hired a full time staff in a position of special coordinator to be responsible for the routine management and communication of the project, and encourage and mobilize personnel to actively participate in the project activities through discussion, communication and publicity;
- 6) Temporary hiring staff: The project will also employ some people for the purpose of labor force only to participate in part of the project activities, such as thinning, planting, and tending.
- 7) Private sector: the contract supplier engineer was responsible the forest watcher system installation and operation.

In overall, Stakeholder participation has been quite strong enough from the project design stage and through the implementation of the project.

Project Stakeholder Participants Rating	Highly Satisfactory
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4.3.2 Project Management

- 40) The project management team prepared for the official start of implementing the project, including the Project Steering Committee (PSC). Preparatory activities such as formulation of the Annual Work Plan, and recruitment of the Project Staff. The project is headed by the Director of IRD. Under the project director, there was a Project Coordinator and several key personnel of the FA. The recruited staff were proven to be competent in the field of restoration and facilitation. International Consultants and Domestic Consultants were hired to provide backstopping on specific tasks. The project Document Office under the direct supervision of the Project Director is responsible for developing project progress reports, and

project publicity materials in close collaboration with APFNet.

- 41) The capacities of the Technical Staff in FA still needs to be strengthened in terms of monitoring and planning, providing training, GIS, budgeting, and operation of the Forest Watcher Technology. The Consultants provided technical backstopping on these aspects. The APFNet has provided support to the project and provided guidance in preparing the progress report. At the end of the first year of operation, there was a brief delay in the disbursement of the project grant. The succeeding operation; however, has improved and the implementation of the project went smoothly. There was regular communication between the executing Agency and the partiers. The reports were regularly submitted and some problems like in the case of a broken gadget of the Forest Watcher System that needs to be referred to the Chinese company.

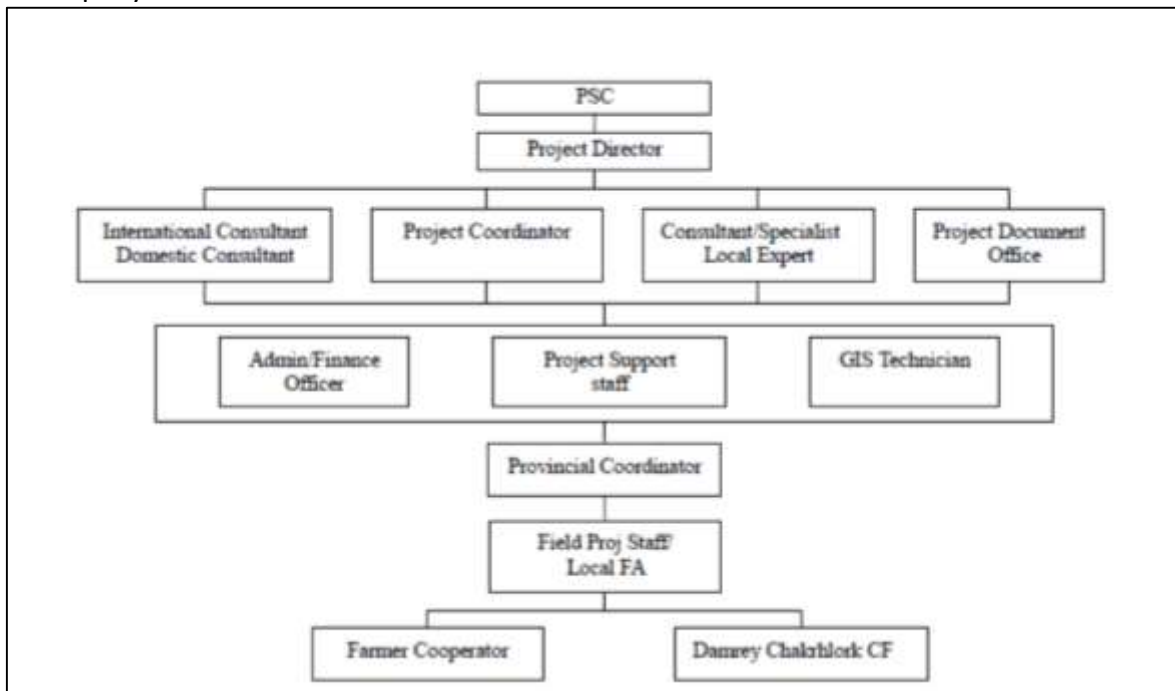


Figure 2. The project organizational chart is illustrated as above.

Project Management Rating	Highly Satisfactory
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4.3.3 Budget and Cost Effectiveness Management

- 42) The budget had been used correctly following the financial management. The procurement procedure applied in this project was aligned with the Royal Government of Cambodia. The project has an accountant who manage expenditure with the approval from the Project Director during the project implementation. At the end of the project, the fund was audited with a report of financial audit. The utilization of the financial resources was used in according to the agreement between APFNet and IRD-FA. An explanation was also provided on the variance between financial utilization and budget, together with the approval from the APFNet secretariat.

Project Budget and Cost Effectiveness Management Rating	Highly Satisfactory
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4.4 Overall Project Evaluation

43) Overall, the project is on track to meet its development objectives, except the Activity 10.4 Participate in APFNet's project experience sharing activities due to Covid-19 travel restriction. Most areas are rated as *Highly Satisfactory*. It means that the project had no shortcomings in the achievement of its objectives in terms of relevance, effectiveness, or efficiency. Most of the activities had done successfully with satisfied output and indicator and some activities are in the target achieved in the final year.

Table 4. Summary Project Overall Evaluation

Project Formulation	Rating	Explanation
Project Relevance	HS	
Project Design	HS	
Project Implementation Approach	HS	
Project Logical Framework	MS	This project missed identifying the verified indicators. The logical framework needs to have exact indicators to ensure that the project is implemented correctly to the proposed plan as stated in the proposal.
Project Implementation	Rating	Explanation
Stakeholder Participants	HS	
Project Management	HS	
Budget and Cost Effectiveness Management	HS	
Project Result (to date)	Rating	Explanation
Project Objective	HS	
Output 1: Community forest management plan formulated	HS	
Output 2: CF boundary demarcated and patrolled	HS	
Output 3: FA Triage nursery improved	S	Even though the nursery has been improved, however, the actors have been stopped due to a lack of staff to take responsibilities (the staff moved to Phnom Penh)
Output 4: Restoration and Silviculture models established	HS	
Output 5: Village water supply system established	HS	
Output 6: Agroforestry farming system established	S	The project has chosen the less committed farmers resulting in less progress in implementing agroforestry. This model will be not spread among

		other villagers if the selected family is inactive in the agroforestry system.
Output 7: Home garden farming system established and maintained	S	The location of the home garden has been moved to another commune far from the project site. This will cause no impact of this model on the project area. However, the moved garden worked well with other 2 farmers in Krang Serey Commune
Output 8: Forest watcher system and auxiliary facilities installed and maintained	S	While the system is not operated properly, particularly in Tamao Zoo. It is already stated in the proposal that, within the period of the project (4 years), the maintenance should be under the responsibility of the supplier company. However, as confirmed by APFNet project management division, the forest watcher company's maintenance personnel are unable to travel to the sites for repairs due to Covid-19 travel restriction
Output 9: An integrated forest management technology assembled and a technical handbook formulated	HS	
Output 10: Experience and technology demonstrated and disseminated	HS	

V. EVALUATION RESULTS AND CONCLUSIONS

5.1 Evaluation Results

A. Strategic Relevance

A.1 Alignment to APFNet Objectives and Strategic Priorities

- 44) Alignment to APFNet objectives and strategic priorities are assessed as **Highly Satisfactory**. The project design is significantly aligned with the APFNet's objectives, such as i) to help enhance forest carbon stocks and improve forest quality and productivity by promoting the rehabilitation of existing but degraded forests and the reforestation and afforestation of suitable lands in the region; ii) to help reduce forest loss and degradation and associated greenhouse gas emissions by strengthening SFM and enhancing biodiversity conservation, and iii) to help increase the socioeconomic benefits of forests in the region. The project was highly relevant to *APFNet Strategic Plan 2021-2025*. The project's result significantly contributed to Priority 1: Rehabilitating degraded forests and increasing forest cover; Priority 2: Promoting sustainable forest management to enhance ecological functions and ecosystem security of forests, and Priority 3: Enhancing forests' contribution to socio-economic development and to improvement of local livelihoods.

A.2 Relevance to National Priorities

- 45) Relevance to national priorities is assessed as **Highly Satisfactory**. The project alignment with Cambodian National Forestry Programme 2010-2029 is detailed in Programme 4: Community Forestry Programme, Sub-Programme 4.3: Community Forestry Development Support. It is also relevant to Programme 5: Capacity and Research Development, Sub-Programme 5.1: Institutional and Human Resource Development. The Sub-Decrees on Community Forestry Management is relevant to the objective 3: to establish procedures to enable communities to manage, use and benefit from forest resources, to preserve their culture, tradition and improve their livelihoods. Government policies related to climate change adaptation and mitigation include CCCSP 2014-2023, and the White Paper on Land Policy, enacted in 2015, that seeks to harmonize cross-sectoral land use policy to ensure sustainability.
- 46) The project is aligned with the government's poverty alleviation program as well as the existing Forestry Law, particularly the Guideline of Community Forestry. At the end of the project, the community will continue the activities through their collective efforts. The project design document also identifies potential synergies with projects promoting forest management in Cambodia. In the main, these synergies comprise opportunities to capitalise on capacity building efforts previously implemented by other projects. Some more specific opportunities are identified, notably the potential for restoration protocols and results to be used in REDD+ programmes. The project proposal and implementation plan was relevant to APFNet' objectives. This project will rehabilitate ecological services and product provision of forests in Cambodia through improvement of community forest management and strengthening state-owned forest conservation, so as to contribute to sustainable forest management in Greater Mekong Sub-region. The project design is also consistent with relevant policy documents for the forestry and agriculture sectors. However, the project results framework did not integrate specific indicators from national policy or planning documents.

<i>Project Relevance Rating</i>	<i>Highly Satisfactory</i>
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B. Effectiveness and Efficiency

- 47) There are few activities that were delayed, like the holding of the training and workshops. These are likewise covered by the request for Project Change by deferring the activity which was approved by APFNet. There were additional activities that were
- 48) Requested by the project due to the unexpected needs in the field. These include putting up of water system for the watering of the planted seedlings, and establishment of fence around the restoration plot due to the threat of stray livestock grazing in the area. It is relevant to water contribution for households, especially for those living in the changing climate of the target project areas. Water contribution establishment contributed economic income of household in the areas, including local livelihood improvement including their behavior change and farming system.
- 49) A modification of the species planted and design of the restoration area, agroforestry and home gardens was made after the species that were planted did not perform well. The exotic species in particular, showed poor performance in the site, and has to be replaced. The

success of the project was partly contributed by the Chinese Experts from Yunnan Academy of Forestry and Grasslands, who helped in developing the publications. Some of the requested additional activities, such as the construction of CF nursery and training of the CF members on seedling production were done in made in compliance to the recommendation of the External Evaluator. The project implemented met the planned activities, but it is a bit changing condition due to the activities within the first year, and the approved budget is later than the activity implementation. Also, the publications of the project documents are delayed.

- 50) The performance of project management need efficient resource use. For example, in case of FA trial nursery moved from Chakthlork Community Forestry to FA was renovated 100% completed. This is the proposed change the planned, the technical and financial resources was justified accordingly with the approval from APFNet. Financial resources used is sufficiently. Some budget is not used, for example, budget for CF management development, is developed by a UNDP-supported project. Therefore, the adjustment of the budget from this package is approved from APFNet's Secretariat with the proofed email. The project implementation is involved with participant of gender approximately 40% of the project staff. The national partners involved in the design of the Project, including Project Steering Committee Provincial Governor, academia, NGOs, IRD, local FA and local communities.
- 51) There is a direct and strong link between project expected results (Result and Resources Framework) and the project design (in terms of project components, choice of partners, structure, delivery mechanism, scope, budget, use of resources etc.). However, the length of the project conducive to achieve project outcomes is inadequate to implement due to the agroforestry application and home garden should be taken more time to see its impacts.

C. Project achievements

Achievement of Project Outcomes is assessed as Highly Satisfactory based on the observations of the evaluation team, including document studies, stakeholder consultations and field visits.

Achievement 1: Developed a model for community forest management by strengthening CF management and testing appropriate restoration and silviculture technology;

In response to the project objective, it aims to rehabilitate ecological services, restore forest in degraded areas and provide products of forests in Cambodia through improvement of community forest management and strengthening state-owned forest conservation, so as to contribute to sustainable forest management. The restoration technologies models were developed and demonstrated integrated models to improve the community forest management in Damrey Chakthlork Community Forest (CF), which covers a total CF area of approximately 1,452 hectares. A different technique with a different model to those areas was to implement within a specific types of degraded forest. All 4 models gave an integrated technical guidance for CF. As necessarily needed, the restoration of degrade forestland was one of the key component for the APFNet supported project. Community forest (CF) development action plan was formulated with detailed approaches in both technical and management aspects on forest restoration and forest management, which generated benefit to relevant stakeholders. The forest types had classified into different grades of degradation with species composition and stand structure adjusted through reforestation and silviculture treatments. Therefore, selected tree species should have dual functions of ecological and economic benefits of community forest' productivity.

Achievement 2: Mitigate the dependence of the communities to forests by improving household farming systems

In order to improve the local livelihood in the CF through mitigating the dependence of the communities based on the forest resources. The project addressed the problems happening insight the CF by developing sustainable agroforestry and home-garden farming system. These were useful measures to improving household farming system. The demonstration sites for agroforestry model and home-garden farming model strengthened the productivity of degraded lands and generate more cash incomes for farmers. The land size of agroforestry system was 1 ha. It was significantly to establish an agroforestry model by applying intercropping of high-value cash tree species such as macadamia trees with vegetables with economic value and also to reduce soil erosion, improving biodiversity and ecological benefits including soil improvement, tree species selection with soil condition and intercropping pattern. For the establishment of home-garden farming system demonstration with a total area of 0.5 ha. The technology was used the crop rotation planting, where different plants replenish some nutrients to the soil through the litter that the plants deposited to the soil. Currently, the farmers harvest vegetables about 450-700 kg per month and earn an income of \$300--\$500 per month. Woodlot was implemented on area of 7,433 sq.m. subdivided into two blocks. The first block was to maintain existing trees while the second block was applied with silvicultural treatments (thinning) and understory planting of shade-tolerant crops. The strips measuring 3 m wide were established where the undesirable tree species were removed, keeping the commercially important trees. In between the spaces, galangal and turmeric were planted. This technique was to demonstrate the possibility of inter-planting shade tolerant cash crops in the second growth forests to generate intermediate income. On the other hand, water supplies intervention was enhanced due to both agroforestry and home-garden models needed water for irrigation. The main water line connected from the water tank to the cluster of houses spanning a total of 2km. The individual houses were then connected from the main pipes. There are 51 individual households were connected by the water system and using the availability of tap water in the village, particularly the local people were willing to pay the water fee (2,500 Riels per month). Finally, local livelihood improved through applying both agroforestry and home-garden, together with water supplies system intervention, can increase farm production or income. Diversifying production, such as food, fiber, fodder, fruit, construction materials, medicine, and providing ecological services that help increase food security and improve household livelihoods can increase forest income.

Achievement 3: Enhanced forest protection through adopting an advanced forest monitoring system (Forest Watcher)

The CF management has been strengthened where the 100 concrete pole were installed and forest restoration in different CF forest types enhanced where both boundary demarcation and patrolling were set up with the participation from community forestry members. The patrolling was conducted every month to prevent illegal logging in the CF, especially during dry season because of illegal logging rarely happen in rainy season. Also, patrolling is also conducted frequently during dry season in order to respond immediately in case forest fire happen. In

addition, the project has installed a forest watcher system to help in monitoring the status of the vegetation in the surrounding areas, like fires and the condition of the vegetation. The applied technology was contributed to build capacity of FA staff and human resource development to handle the system. Finally, this technology is low cost for forest monitoring played a key role in supporting the forester and manager for planning their field activities.

Achievement 4: The project extends achievements and related techniques in Cambodia and GMS by demonstration and experiences sharing

The project organized activities to extends the achievement and related techniques in Cambodia, including a summary of relevant technologies based on activities carried out and experience of the project. The technologies implemented by the project include restoration of degraded community forest, establishment of agroforestry and home garden farming systems, as well as the documenting the experiences of installing and operating the forest watcher system. The following activities include:

- The workshop of sharing experience of management forest fire monitoring (Forest Watcher System) organized through Zoom Meeting by the Institute of Forest and Wildlife Research and Development (IRD) on 13 June 2022, with a total of 30 personnel. The purpose of the meeting was to share the experiences on Forest Fire Monitoring System operating and management of forest fire monitoring (Forest Watcher System), project Progress Output of Integrated Forest Ecosystem Management Planning and Demonstration Project to the Forestry Administration officers.
- Disseminating and Sharing Experiences of Project Progress Output “Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Cambodia)” to National and Sub-National Forestry Administration Officers, university students and community forestry committee members, held on 17 June 2022, with a total of 47 participants
- A field visit was conducted to Forest demonstration plots and agroforestry, Damrey Chakthlok, Dokpor village, Kraing Deywai commune, Phnom Srouch district, Kampong Speu province on 18 June 2022, with a total of 42 participants. The study visit was to lead the National and Sub-national forestry administration officials and universities student to studies and learned the methods of planting, restoring and managing forests and the implementation of home gardens in Damrei Chakthlok community forestry.
- A field visit was conducted to Forest monitoring watcher system and forest restoration Khun Ream commune, Bontey Srey district, Siam Reap province on 23 June 2022, with a total of 35 participants. The study visit was to lead the National and Sub-national forestry administration officials and community forestry committees to learnt on forest restoration and visited forest monitoring system at Khun Ream Forest Restoration areas.

Finally, to achieve the restoration goal, different methodologies and technologies integration such as woodlot model, home garden, agroforestry system, and forest land use planning approaches were addressed to be useful. In this forest restoration activities, species selection was also highly considered so that the selected species matched with site condition as well as market demand. Finally, aside from species selection, the livelihood improvement of local community member is very important for sustaining the activities of the community.

D. Impacts

- 52) The project implementation was clearly classified the project impacts from different aspects including: Strengthening community forest management by supporting of the project on the patrol operations and the installation of the boundary posts and billboards increased the awareness of the community on the boundary of the CF thereby reducing the encroachment and forest violation. Improving local livelihood by integrating agroforestry and home garden model in order to generate daily income for their family. One of the major impact of the project is the availability of water to the community members. The households no longer buy water from the seller of water. The community was able to plant vegetables in their backyards after they were able to connect from the water system put up by the project. The farmer cooperators who participated on testing the agroforestry and home garden technologies experienced better yield. Water supplies intervention enhanced due to the area was lack of water sources, and the project supported the water supplies system for householder consumption.
- 53) The project likewise benefited the academic institutions and the students in Forestry who visited and learned the actual implementation of the project and raised awareness of community forest management at local community level. The project has been presented to policy makers. The Forest Watcher also drew interest to higher officials from the FA and MAFF who observed how the Forest Watcher technology works. The project likewise helped in building the knowledge and technical skills of the local FA staff through trainings organized by the project. The project has directly contributed to the increase of the forest cover through its restoration activities as the forests recovered due to the protection interventions of the project. Seedlings were able to grow in the plots that were protected from fires and from stray animals.
- 54) Enhancing of forestry protection increased the understanding of the CF members on the restoration techniques. The importance of technologies in monitoring the forest conditions has been acknowledged by the policy makers. The ecological function of forests in the project area been enhanced where new species appeared in the area e.g. rabbit. The project supports the needs of target beneficiaries including pole demarcation, knowledge of forestry management, agricultural inputs (seeds, seedling, equipment, and fruit tree).
- 55) Project impacting the local environment using compost, so that the farmer reduced their expense. The project supported the patrolling activities for the community where the community members worked hardly before the intervention as it currently reduces patrolling activities. Water system is a potential impact contributed to the improvement of local livelihood through water user group with their members willing to pay for community. The community was able to plant vegetables in their backyards after they were able to connect from the water system put up by the project.

Project Sustainability Rating	Highly Satisfactory
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E. Sustainability

The project is expected to contribute to (i) social and economic sustainability, (ii) Environmental resource sustainability, (iii) financial sustainability, and iv) Institutional sustainability as followed:

a. Socio- Political Sustainability

56) Socio-political sustainability is assessed as *Moderately Likely*. In this project, socio-political sustainability impacts depend critically upon two main factors, such as the commitment of the target community forestry to integrate a success forest degradation restoration technique with adequate, sustainable livelihoods; and the commitment of authorities at national and sub-national levels to support them.

b. Environmental resource sustainability

57) Institutional sustainability is assessed as *Likely*. The technology tested is expected to contribute to the improvement of the farm production of the farmer cooperators. It is expected that the project motivated the other farmers to observing the farming method and adopt the technology promoted by the project. By adopting the agroforestry system, the farmers are more resilient to the harsh climatic condition. The project is expected to contribute to the enhancement of the forest condition of the site and the productivity of the farms. As such, the farmer generate sustainable income generation when the projected. Whenever appropriate, the project introduced to the farmer a multistory cropping that maximized the canopy layers and increase the biomass per unit area. The agroforestry technology also expects to contribute to the higher organic matter to the soil.

c. Financial Sustainability

58) Financial sustainability is assessed as *Likely*. Many of the project outputs, including tree planting, support to agroforestry and home-gardens do not require ongoing funding or are inherently self-financing. Agroforestry and home garden support consisted primarily of distribution of seeds and of equipment including nets (mainly for fencing), water butts etc. Home gardens were integrated with water supplies interventions, increasing the potential for year-round production. The project has put up water distribution system that connects the households from the water source. The project also helped in stabilizing the pond from erosion. The water distribution system provided significant impacts as the members can now raise vegetables in their backyards. Water supplies interventions were a significant success and highly appreciated by the beneficiaries overall. The establishment of the water system at CF had a transformative effect with almost all 51 households now receiving water directly from a water system. A community pond established at CF is in good condition. The pond would be an important resource for the broader community in the event of a drought. The water supply systems appear to be within the capacity of the communities to maintain. The funding sources from the government is on discussion due to agro-forestry is a long-term impact.

d. Institutional Sustainability

59) Institutional sustainability is assessed as *Moderately Likely*. The institutional framework for sustainability of the CF is in place, though could be strengthened based on lessons learned from the project, in particular with regard to generation of incomes to support CFMC activities as well as community livelihoods. The actual institutional and administrative capacity of the CF committees varies. As described above, the evaluation team assessment is that the smaller CF has more coherent and purposeful committees. A re-organization of the larger CF in Krang Deviy could be considered, with the aim of creating a water user group, more focused group of households with stronger cultural and economic links to the forest

restoration. The CFMC implemented the project in their CF areas and help in coordinating with the farmers in implementing the agroforestry technology. The CF areas are state land where one agroforestry site be implanted. The other sites (1 home garden, 1 agroforestry site, and 1 water pond) established outside the CF area. In all cases, an agreement will be entered with the farmer cooperators. Some of the activities like patrolling and meetings may be sustained partly by the intermediate income that will be generated from the community forest.

- 60) Beneficiaries/stakeholders have gained expected economic benefits and improved the capacity to sustainably manage forests attributed from opportunities for being trained/involved in the projects, including knowledge of agro-forestry and home garden and livelihood improvement. The positive impacts after project termination is that water distribution system considering long-term impact for the sustainability, and they are willing to pay 2,500 KHR per cubic meter. Other potential impacts, the local farmers copied the model of agro-forestry and home garden to apply a larger area of their own land.
- 61) The project organization and management consists of the FA, the IRD, and local FAs. The IRD implemented the project directly with technical staff and conducted the monitoring and overall supervision of the project. At the local FA level, selected local FA Staff from the Cantonment, Division and Triage involved to implement the project together with the Community Forestry. The local community had its role to management and follow up activities.

Table 5. Ratings of Project Sustainability

Risk Category	Likelihood of Sustainability			
	Likely	Moderately Likely	Moderately Unlikely	Unlikely
Socio- Political Sustainability		√		
Environmental resource sustainability	√			
Financial Sustainability	√			
Institutional Sustainability		√		
Overall Sustainability		√		

Therefore, sustainability is assessed as *Moderately Likely*.

Project Sustainability Rating	<i>Moderately Likely</i>
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5.2 Conclusion

- 62) **Forest restoration is difficult to work and it needs to integrate with different skills which includes environmental, social and economic consideration.** To achieve the restoration goal, different methodologies and technologies integration such as woodlot model, home garden, agroforestry system, and forest land use planning approaches were shown to be useful. In this forest restoration activities, species selection was also highly considered so that the selected species will match with site condition as well as market demand. Otherwise, species selection is one of the key challenges for project implementers and farmer needs, the livelihood improvement of local community member is very important for sustaining the

activities of the community.

- 63) **Livelihoods improvement requires taking full account of the needs of local farms and increasing their motivation to participate in forest restoration activities.** The project aims to rehabilitate ecological services and product provisioning services of forests in Cambodia through improvement of community forest management and strengthening state-owned forest conservation, so as to contribute to sustainable forest management in Greater Mekong Sub-region. The project has been designed not only for livelihood improvement, but also forest restoration and management that benefits the environment, such as preventing soil erosion, soil improvement, and ecological functions in the project target areas. However, after the implementation, livelihood improvement not improved as expected due to poor market prices of agricultural products. The limitation of income generation lowered the enthusiasm of the community members to engage in farming. Livelihood improvement has to be taken seriously so that local community members could fully participate with strong commitment for forest restoration activities in their community.
- 64) **Based on the analysis of relevant strategies, the project design is significantly aligned with the APFNet's objectives, and was highly relevant to APFNet Strategic Plan 2021-2025.** Also, the project aligned with Cambodian National Forestry Programme 2010-2029 and CCCSP 2014-2023. As stated in the project design document also identifies potential synergies with projects promoting forest management in Cambodia. Capacity building were also provided to FA official and CF members. The impact of the project benefited to the academic institutions and the students in Forestry who visited and learned the actual implementation of the project. The project likewise helped in building the knowledge and technical skills of the local FA staff through trainings organized by the project. The major impact of the project is the availability of water to the community members and water supplies was enhanced. Water system is a potential impact contributed to the improvement of local livelihood through water user group with their members willing to pay for community. The project contributed to social and economic sustainability, environmental resource sustainability, financial sustainability, and Institutional sustainability. The funding sources from the government is on discussion due to agro-forestry is a long-term impact. Beneficiaries/stakeholders have gained expected economic benefits and improved the capacity to sustainably manage forests attributed from opportunities for being trained/involved in the projects, including knowledge of agro-forestry and home garden and livelihood improvement enhanced.
- 65) **Overall, the project is in a strong performance and on track to meet the development objectives originally laid out in the project document.** To date, the project has delivered toward achievement of outputs as planned except the activity 10.4 (Participate in APFNet experience sharing activities), all the targets have been achieved. There are also some additional activities that implemented due to unexpected needs in the field such as digging of 2 ponds, establishing tree nursery for community forestry at Dopor village, fencing around the forest restoration plots and watering of the seedlings. Even though, the project faced difficulties in the last 2 years due to the COVID 19 pandemic, the project was able to achieve its main goals and targets.

VI. RECOMMENDATIONS AND LESSONS LEARNED

6.1 Recommendation

6.1.1 Related to Project Design

- 1) The Project design should be considered with the timeframe of the implementation and fund available for the project. In case of agroforestry and home garden may take long time to benefit.
- 2) The project objectives shall be in conjunction with the project outcomes, outputs and constituent interventions.
- 3) The project design should be included a financial sustainability plan in order to keep track on the implementation of activities continuing.
- 4) Cost-benefit analysis activities are not designed during planning stage so that it is not easy to assess the feasibility of agroforestry/home garden practices or measures to improve community livelihoods accurately
- 5) The project management structure was rather centralised, with funds managed at national level and only light involvement of PDAFF or sub-national authorities at Province, District or Commune level. A more decentralised approach might have reduced costs for monitoring activities and might have resulted in greater local inputs to selection of appropriate activities (for example, tree and crop varieties) for each site.

6.1.2 Related to Project Implementation

- 6) Based on the experience from the project, forest watcher system was not working properly due to limited capacity from the project staff. Therefore, the continuous capacity building of project staff through on the job training with technical backing up from external expert. In addition, since most of forest area are not connected to the electrical grid, if the requirement is high technology, a high capacity of generator to produce enough electricity, such as equipping high capacity of solar energy to run the system should be considered. The system in Tamao Zoo should be fixed by the supplier company as it is still in warranty period. This action should take immediately within the project implantation period.
- 7) Both agroforestry and home garden practices can increase farm production or income. Diversifying production, such as food, fiber, fodder, fruit, construction materials, medicine, and providing environmental services that help increase food security and improve household livelihoods can increase forest income. For long-term sustainability, linking the farmer who practice agroforestry and home garden with traders would be essential since the trades know well about the market demand while local community members know how to plant. Finally, the project should select more households based on their needs.
- 8) The species selection to be applied for agroforestry and home garden located inappropriate geographical areas. Both agroforestry and home garden technology proved to be effective in the increasing the production of farmers. The new spatial arrangement has optimized the canopy layer and could effectively utilize the space.
- 9) A triage nursery improved was moved to FA; however, the project should consider the volunteering activities from forest community to handle the management and operation of the nursery in the project site due to the CF members get benefit from conserving forest, they would be participated in nursery management. To do this, the project team should

facilitate in establishing nursery management team and also provide some technical training to those villagers.

- 10) A monitoring on the vegetable changes should be conducted using state of the art technologies such as drones to see the landscape of the whole farming system.
- 11) Closer coordination can be made through frequent meetings using online meetings. This provide an inexpensive way of consulting the different actors remotely thereby minimizing the disturbance of the field staff from their works.
- 12) Designing restorations should consider the local knowledge of local experts. The community also need to be consulted on the appropriate species to plant in the area.
- 13) A home garden can potentially improve the condition of the farmers. The experience of the project has shown improvement of the farm plot of farmer cooperators who adopted the home garden technology. This should be promoted as a practical approach in addressing poverty. To promote home garden, cost-benefit analysis should be conducted to understand the benefit from its productivity.
- 14) The partially degraded forests can be inter-planted with shade-tolerant crops, such as galangal to increase intermediate income. Other shade tolerant crops such as mushrooms (Ear Mushrooms), cardamom, arrow roots and other crops should be explored or tested.
- 15) The planted seedlings die due to climate condition (some seedling, species e.g. black peppers, Macadamia, Pomelo), hot temperature and lacking of water during dry season. The team dug a pond in order to store water for irrigating the plants. However, it still not worked enough due to most areas have no soil cover. Tree-planting in the restoration areas should use the rice-straw as a soil cover technique enhance the survival rate. This soil cover could help to maintain the soil moisture, reduce heat stress, and saving water.
- 16) Project dissemination should be organized with the participation from the public, not just only FA official and students.
- 17) Research papers should be conducted by students to understand more depth in forest restoration.

6.2 Lessons learned

- 10) Knowledge of technical aspects including burning rice straws and knowledge of soil erosion, different ecology function including peppers growing.
- 11) The government is making high efforts to protect forests, so it is right direction of implementing projects related to forest management and restoration including agro-forestry and home garden. To succeed in agroforestry and home garden, the project is required to prepare a farm plan and looking for a short future with the change of their farm in the form of landscape.
- 12) Appropriate technical application should be considered for forest restoration, the participation from local community is crucial for the success in forest restoration. The participation of local community members ranging from controlling land encroachment and preventing cattle to wander to the restoration site. Furthermore, protecting forest from fire is also important for community members since the forest fire was caused by local people after the harvesting season.
- 13) The results addressed to the identified problems including soil erosion and land degradation, but the selected proper technologies should be considered for local community in different ecological zones.

- 14) The introduction of water distribution system has provided significant economic impacts to the households. The households were able to improve their food security since they were able to grow some vegetables in their backyard.
- 15) The support of APFNet is necessary, particularly on the needs of the field. During the implementation, there were unexpected needs that needs support from APFNet, for instance, the farmer cooperators became disinterested on working with their home garden. The project needs to look for alternate site to test the home garden technology. The new farmer cooperators were very cooperative and experienced higher production when they tested the home garden technology. For the next project planning, the farmer needs assessment should be conducted to collect information from farmers, and selection should be made to avoid some farmer might not be interested in the project.
- 16) The Forest Watcher System showed a very promising technology. However, due to the COVID-19 travel restrictions, the company who provided the technology was not able to provide prompt aftersales support when part of the gadget broke down. The current alternate technology that can collect information from the field like drones can offer an alternate technology for field monitoring.
- 17) There is a need to refer to the local knowledge of the community and Local Foresters in the design of the restoration, particularly in deciding the species to plant. It was noted that there was a low survival of the planted trees since some of the species were not suitable to the site. In the case of Agroforestry and Home Garden, exotic species macadamia and pomelo did not grow well.
- 18) Intermediate income can be produced underneath the canopy of woodlots by planting appropriate shade tolerant cash crops. The initial result revealed that galangal can be grown under the woodlot by modifying the canopy.

VII. ANNEXES:

Annex 1: Evaluation Agenda

Tentative schedule for the terminal evaluation from APFNet to field visit project site in Cambodia during 6-14 September, 2022

Dates and Time		Activities	Remarks
September 6	6:00AM-8:30AM	Departure from Phnom Penh to Kampong Speu province	Project team and evaluator
	8:30AM-4:30PM	Visiting target Damrey Chakthlork community forestry	Project team and evaluator
	4:30PM-6:00PM	Departure from Kraindeyai CF to Kampong Speu town	Project team and evaluator
September 7	7:30 AM-11:30 AM	Visiting Home gardens area	Project team and evaluator
	15:00PM -17:00 PM	Departure from Kampong Speu to Phnom Penh	Project team and evaluator
September 8	9:00AM-12:00AM	Meeting with Forestry Administrative	Project team and evaluator
September 12	7:00AM-3:00PM	Departure from Phnom Penh to Siem Reap province	Evaluator
September 13	9:00AM-4:30PM	Field visit to Botum community forestry	Project team and evaluator
September 14	8:30AM-9:30AM	Meeting with Siem Reap Provincial Department of Agriculture, Forestry and Fisheries at PDAFF, meeting room	Project team and evaluator
	9:30AM-12:00PM	Presentation of the results of the project implementation work and Discussion on project work results	Project team and evaluator
	2:00PM-19:00PM	Departure from Siem Reap to Phnom Penh	Project team and evaluator

Annex 2: Project Progress Table (against project logical framework)

Terminal evaluation's rating:

- **Highly satisfactory/4:** The project embodies the description of strong performance provided below to a *very good* extent.
- **Satisfactory /3:** The project embodies the description of strong performance provided below to a *good* extent.
- **Moderate/2:** The project embodies the description of strong performance provided below to a *fair* extent.
- **Unsatisfactory/1:** The project embodies the description of strong performance provided below to a *poor* extent.
- **Highly unsatisfactory/0:** The criterion was *not assessed*.
- **D/I:** The criterion was considered but data were insufficient to assign a rating or score

The achievement's legend:

Highly satisfactory	Satisfactory	Moderate	Unsatisfactory	Highly unsatisfactory	D/I
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Project Objective/output/Activities	Indicators	Progress made (%completion of activities and degree of output/objective achievement)	Evaluator's rating	Evaluator's comments
Output 1: Community forest management plan formulated	CF management plan formulated			
Activity 1.1 Survey current conditions of CF and its management	Field investigation made	<ul style="list-style-type: none"> • The field investigation has been made by the project team at the beginning of the project. The activity is considered as 100% complete with the achievement assessed as <i>Highly Satisfactory</i> 	Highly Satisfactory	
Activity 1.2 Formulate and print CF management Plan	CF management plan formulated	<ul style="list-style-type: none"> • The project has produced three documents for the project. The three documents were produced by Chinese Consultants, and already disseminated. • 100% Completed with <i>Highly</i> 	Highly Satisfactory	

		<i>Satisfactory</i>		
Output 2: CF boundary demarcated and patrolled	100 boundary poles installed			
Activity 2.1 Make and install poles and billboard	Poles (100) and billboard (4) established	<ul style="list-style-type: none"> Total 100 boundary concrete poles and 4 billboards were installed in the demonstration area based on the project document. In contrast, 6 billboards were actually installed. That was highly committed by the project team 100% Completed with <i>Highly Satisfactory</i> 	Highly Satisfactory	
Activity 2.2 Patrol the CF	CF patrolled	<ul style="list-style-type: none"> 30 patrolling team were formed with total 450 CF members, female 64. Only 5 team still working properly. However, it is not followed the project plan Due to having different team consist of 5 big teams. 15 sub-team team was established. 40 signboards were produced and installed around forest restoration plots, 2 guardhouses were constructed and used by the patrolling team as shelter and meeting place 100% Completed with <i>Satisfactory</i> 	Satisfactory	

Output 3: A FA Triage nursery improved	FA triage nursery improved/rehabilitated			
Activity 3.1 Improve Triage nursery facilities	Nursery facilities improved/rehabilitated	<ul style="list-style-type: none"> • 8 species were planted about 5400 seedlings. However, the triage nursery was moved from the target area to FA in Phnom Penh due to the change of management from decentralization to centralization and staff movement. This change should have a support letter from APFnet to proposed change location. • Triage nursery was replaced by FA Division nursery and was renovated 100% completed including repair of roof, fence, nursery beds, irrigation system and pond restoration. • 100% Completed with <i>Satisfactory</i> 	Satisfactory	
Activity 3.2 Raise seedlings in the nursery	Seedlings produced in the nursery	<ul style="list-style-type: none"> • 11 tree species were raised in nursery include fruit tree. The total seedling produced was 18 990 seedlings. • The overall evaluation is medium satisfactory as the nursery should be established inside the community to make it will work after the project ended. The project supported 	Satisfactory	

		materials that will be used in the CF, agroforestry and home garden farming systems, as well as for other potential beneficiaries.		
Output 4: Restoration and silviculture models established	Restoration and silviculture models established			
Activity 4.1 Design and prepare soil for 3 types of degraded forestlands	Design and land preparation for the 3 types of degraded forestlands	<ul style="list-style-type: none"> • 4 types of degraded forestlands – Deforested Area, Severely Degraded Forest, Moderately Degraded Forest and Dense Forest – were identified and soil was prepared for pilot restoration with the total area of 16 hectares. • It is rated as <i>highly satisfied</i> as the water still not enough to irrigate. In this case, more ponds should be dug at the experimental area to enhance the survival rate. Due to survival rate is about 40% • 100% Completed 	Highly Satisfactory	
Activity 4.2 Plant and maintain restored forests	The degraded area planted and maintained	<ul style="list-style-type: none"> • 28,362 seedlings were planted in the 4 types of degraded forestlands. Seedling management/maintenance and replanting (9,624 seedlings). Forest fire break and pond were constructed for seedling maintain. • 80% completed 	Satisfactory	Water distribution was already installed, but it was destroyed due to human and animal activities and lack of technician -Pond was constructed for maintaining the seedling. water pipe also installed, but they have been broken sine

				the management and maintaining are poor
Activity 4.3 Clear, plant and tend in dense forest	The dense forest area cleared, planted and tended	<ul style="list-style-type: none"> The total area of 16 hectares were cleared and planted only 12 ha since the first year, and the villagers' cow disturbance to the fence of planting areas. 80% Completed 	Satisfactory	
Output 5: Village water supply system established	Water supply system installed			
Activity 5.1 Stabilize pond dike and install pumping facilities	Dike stabilized and pumping facilities installed	<ul style="list-style-type: none"> The pond dike was stabilized. One water tank supported by a concrete tower were constructed and installed. One water pump was provided 100% completed 	Highly Satisfactory	
Activity 5.2 Lay out main water pipe from the pond to the village	Water distribution system installed	<ul style="list-style-type: none"> The main water pipe was laid out and main water line connected from the water tank to the cluster of houses spanning a total of 2km with 51 individual households were benefited. 5 water users group were set up to manage the water consumption. 100% completed 	Highly Satisfactory	Water distribution system was broken; some household could not access to water use due to the commune not allowed to dig hole across the road. Some farmers not pay fee for water. However, the villagers were very satisfied and happy and fully participated and willing to pay for water fee.
Output 6: Agroforestry farming system established	Agroforestry farming system established			

<p>Activity 6.1 Prepare soil, irrigation facilities and seedlings (including import)</p>	<p>1) Land preparation made; (2) Irrigation facilities installed; (3) Seedlings produced.</p>	<ul style="list-style-type: none"> • Agroforestry was designed with land size is 100 m X 100 m. This system keep soil improved by selecting tree species and intercropping, and to reduce soil erosion • 1 hectares of land were equipped by irrigation facilities and the soil was also prepared for agroforestry farming system • 100% completed 	<p>Highly Satisfactory</p>	
<p>Activity 6.2 Plant and maintain cash trees and vegetables</p>	<p>Cash trees and vegetables planted and Maintained</p>	<ul style="list-style-type: none"> • 1 agroforestry was developed in Krang Deivay Commune • Agroforestry worked under progress due to vegetables were harvested, and some cash trees have not yet harvested. Finally, the system has developed and get some income and reduce land degradation in the area. • 80% completed 	<p>Satisfactory</p>	
<p>Output 7 Homegarden farming system established</p>	<p>Homegarden farming system established</p>			
<p>Activity 7.1 Prepare soil, irrigation facilities and seedlings</p>	<p>(1) Land preparation made; (2) Irrigation facilities installed; (3) Seedlings produced.</p>	<ul style="list-style-type: none"> • Soil and irrigation facility was prepared. 2 farmers were selected to pilot home garden in Krang Deivay commune. • This 2 home garden installed for 3 years, but the farmers did not work due to the lack commitment of the farmers, so the proposed change has been 	<p>Satisfactory</p>	

		<p>made to Krang Serey for other two households.</p> <ul style="list-style-type: none"> • 100% completed 		
Activity 7.2 Plant and maintain cash trees and peppers	Cash trees and vegetables planted and Maintained	<ul style="list-style-type: none"> • First, the selected 2 farmers, but it does not work in Krang Deivay, they planted cash tree peppers for home garden • 100% of pepper and was dead and Macadamia is 6% survival rate because the of soil and climate condition. This case should be introduced local native species to adapt with climate condition 	Moderate	The project team introduced other cash tree that tolerate in that area. This case also got the approval from the AFPNet.
Output 8: Forest watcher system and auxiliary facilities installed and maintained	Forest watcher system become operational and maintained			
Activity 8.1 Survey, design and construct auxiliary facilities	Design for the system installation	<ul style="list-style-type: none"> • The site survey stage to select the proper site for forest watcher system. The suitable site should be safe and not flooded. • The operational plan has been made by the supplier engineer (Chinese Company) • 100% Completed 	Highly Satisfactory	
Activity 8.2 Deliver and install forest watcher system	Forest watcher system installed	<ul style="list-style-type: none"> • 2 forest watcher system in Khun Ream Research Station and Tamao Zoo were installed by Chinese contractor. However, this needs to be 	Satisfactory	

		<p>enhanced by repairing the error system and put in operation as soon as possible.</p> <ul style="list-style-type: none"> • 100% completed 		
Activity 8.3 Test system, train personnel, and process data/images	<p>1) Training carried out on the use of the system; 2) The forest watcher system tested; 3) Data collected.</p>	<ul style="list-style-type: none"> • The responsible person has trained about the system and data/image process after the installation. However, this is the novel technology introduced to Cambodia, especially the project team, the project officers rely mainly on the experts from China. • 80% completed 	Satisfactory	
Activity 8.4 Maintain and repair the watcher system	The system maintained	<ul style="list-style-type: none"> • The forest watcher system in Tamao Zoo has been error and it could be used after 2 month of installation. As it is in the period of the project, the maintenance is under the management of the supplier engineer as stated in proposal. • The system in Khun Ream Research station quite working well nowadays, but Camera is broken. However, there is still a problem with the electricity. • 100% completed 	Satisfactory	<ul style="list-style-type: none"> • This system need to have higher capacity of electricity and need to operate daily. • For reporting, the government should maintain 30% in-kind contribution. • Should have a similar project to maintain with strong technical aspects. • The project provides capacity to staff/officials who are in charge of this system to be an expertise.

Output 9: An integrated forest management technology assembled and a technical handbook formulated	A technical handbook for integrated forest management technology			
Activity 9.1 Summarize technologies of integrated CF management and experiences of watcher construction	Data and information on Experience learned from project prepared	<ul style="list-style-type: none"> • 1 CF restoration and silviculture and experience of forest watcher construction handbook published • The printed 50 copies. Some of the hand books some were distributed to participant during any workshop organized by FA. • 100% completed 	Highly Satisfactory	
Activity 9.2 Formulate technical handbooks for integrated CF management and for the watcher operation	Technical handbooks for CF management and forest watcher operation formulated	<ul style="list-style-type: none"> • 1 technical handbook for integrated CF management and for the watcher operation produced • 150 copies produced to distribute to FA official and stakeholders. • 100% completed. 	Highly Satisfactory	
Output 10 Experience and technology demonstrated and disseminated	Experience and technology demonstration and dissemination			
Activity 10.1 Organize workshops and field visits of domestic foresters	Field visits for domestic foresters	<ul style="list-style-type: none"> • 1 workshop conducted to share experience of management forest fire participated by National and sub-national FA, community forestry committees, university professor and students and 	Highly Satisfactory	

		<p>NGOs who involved in project areas.</p> <ul style="list-style-type: none"> • 1 field visit was conducted at Khun Ream Research Station in Siem Reap to observe the application of the Forest Watcher System. • 100% completed 		
Activity 10.2 Publish a book of Community Forestry Development in Cambodia	A book of Community Forestry Development in Cambodia published	<ul style="list-style-type: none"> • 1 Book of Community Forestry Development was published by Yunnan Academy of Forestry and Grasslands. • 100% completed 	Highly Satisfactory	
Activity 10.3 Draft and submit a policy recommendation of CF management to FA	A policy recommendation of CF management drafted and submitted to FA	<ul style="list-style-type: none"> • 1 policy brief for integrated community forest management produced and submitted to FA. • A total of 90 copies were distributed to participants during workshop. • 100% completed 	Highly Satisfactory	
Activity 10.4 Participate in APFNet's project experience sharing activities	APFNet's project conferences organized	1 Conferences Participated	Moderate	Cancel this activity due to Covid-19 pandemic. A request was approved by APFNet to revise the target.

Annex 3: Project Overall Tables

Criterion	Description of strong performance	Description of poor performance	Evaluator(s)' rating	Evaluator's Brief Justification
Relevance of Project Design	<ul style="list-style-type: none"> The project links to the FA strategy policy 2025 is to increase forest cover up to 60% and improve the research capacity and forest restoration activities Highly relevant to the National Forest Program 2010-2029 The project design is significantly aligned with the APFNet's objectives Project design is highly relevant to APFNet Strategic Plan 2016-2020 Government policies related to climate change adaptation and mitigation including CCCSP 2014-2023 	<ul style="list-style-type: none"> The design of restoration activities with the 4 type of pilot should be clearly identified and introduced the native species to the restoration areas and need to be known the ecological condition of the species. E.g. Macadamia 	4/4	
Efficiency	<ul style="list-style-type: none"> The performance of project management needed efficient resource use. Financial resources used is sufficiently The proposed change the planned, the technical and financial resources was justified accordingly with the approval from APFNet 	<ul style="list-style-type: none"> The adjustment of the budget from this package is approved from APFNet's Secretariat with the proofed email A few activities that were delayed, like the holding of the training and workshops 	3/4	Due to Covid-19 outbreaks, the request for the project change approved by APFNet
Effectives	<ul style="list-style-type: none"> The project implemented met the planned activities 	<ul style="list-style-type: none"> The length of the project conducive to achieve project 	3/4	It is a bit changing condition due to the

	<ul style="list-style-type: none"> • A direct and strong link between project expected results (Result and Resources Framework) and the project design 	<p>outcomes is inadequate to implement due to the agroforestry application and home garden should be taken more time to see its impacts.</p>		<p>activities within the first year, and the approved budget is later than the activity implementation</p>
Impacts	<ul style="list-style-type: none"> • The project built capacity of local FA staff through training for how-knowledge and technical skill • Water system is a potential impact contributed to the improvement of local livelihood through water user group used the water for growing vegetables and own consumptions • Water user groups are willing to pay for community 2,500 KHR per month. 	<ul style="list-style-type: none"> • A modification of the species planted and design of the restoration area, agroforestry and home gardens was made after the species that were planted did not perform well 	4/4	
Sustainability and duplicability	<ul style="list-style-type: none"> • The commitment of authorities at national and sub-national levels to support them. • Adopted and promoted the technologies used by the projects, including agroforestry and home garden farming system • Beneficiaries/stakeholders have gained expected economic benefits and improved the capacity • Water distribution system 	<ul style="list-style-type: none"> • The funding sources from the government is on discussion due to agro-forestry is a long term impact. 	4/4	

	<p>for local livelihood improvement</p> <ul style="list-style-type: none"> • The agroforestry technology also expects to contribute to the higher organic matter to the soil. • Agroforestry and home garden model to be used to scale up in other areas. 			
Overall score			3.6/4	

Annex 4: Reference Documents

1. Completion Report 2022
2. Report of Experiences from Restoration, Silvicultural Management and Installation of Forest Watcher System 2021
3. Policy brief of Integrated Community Forest Management 2021
4. Technical Handbook for the Technologies Used 2021
5. Mid-Term Evaluation
6. Guideline for APFnet Project Monitoring and Evaluation
7. National Forest Programme 2010-2029
8. APFnet Strategic Plan 2016-2020
9. Technical report on establishment, maintenance and monitoring of agroforestry and home garden 2018
10. Community forestry development in Cambodia
11. Technical guidance on restoration development models and maintenance and monitoring of the plot restoration for Damrey Chakthlork community forest, Kampong Speu 2018
12. A report on current conditions of community forestry and its management

Annex 5: Questionnaire for data collection

The evaluation matrix below served as a general guide for the evaluation. It provided directions for the evaluation; particularly for the collection of relevant data. It was used as a basis for interviewing people and reviewing project documents. It also provided a basis for structuring the evaluation report as a whole.

<i>Evaluation criteria: Relevance -How does the project relate to the main objectives of the APFNet?</i>
1. Is the Project design relevant to APFNet objectives?
2. Is the project relevant to APFNet's strategic plan?
3. Is the Project relevant to Cambodia's National Forest Program 2010-2029?
4. Does the Project address the needs of target beneficiaries?
5. Is the Project internally coherent in its design?
6. Future directions for similar Projects
<i>Evaluation criteria: Efficiency -Was the project implemented efficiently, cost-effectively and in-line with international and national norms and standards?</i>
7. Is Project support channeled in an efficient way?
8. How efficient are partnership arrangements for the Project?
9. Does the Project efficiently utilize local capacity in implementation?
10. Future directions for similar Projects
<i>Effectiveness Criteria: To what extent have the expected outcomes and objectives of the project been achieved?</i>
11. How well the goal, objective and outputs are achieved?
12. How is the Project effective in achieving its long-term objectives?
13. How is the Project effective in achieving its expected outcomes?
14. How is risk and risk mitigation being managed?
15. Future directions for similar Projects
<i>Evaluation criteria: Impacts - What is the main impact of the project?</i>
16. Beneficiaries/stakeholders have gained expected economic benefits and improved the capacity to sustainably manage forests attributed from opportunities for being trained/involved in the projects;
17. Has the ecological function of forests in the project area been enhanced and public awareness towards environmental conservation been raised?
18. What the forest management models/practices have been explored, realizing forest multi-functions and relatively equitable benefit-sharing?
19. How is the Project impacting the local environment?
20. Future directions for the Project
<i>Evaluation criteria: Sustainability- To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining project results?</i>
21. Are sustainability impacts adequately integrated in Project design?
22. How are the positive impacts after project termination?
23. How project activities can self-sustain without other funding resources or is able to seek other funding resources for follow-ups?
24. Organizations arrangements and continuation of activities
25. Enabling Environment
26. Institutional and individual capacity building

27. Social and economic sustainability
28. Duplicability
29. Challenges to sustainability of the Project
30. Future directions for the Project

Annex 6: List of interviewees

No.	Full Name	Sex	Positions	Institutions	Contact
1	Dr. Sokh Heng	M	Director	IRD, FIA	012639961
2	Ma Vuthy	M	Deputy Director	IRD, FA	017766676
3	Kim Soben	M	Director of CAES	RUA	012724686
4	Sok Pheak	M	Staff	RUA	089838550
5	Sien Teamhy	M	Staff	RUA	012639729
6	Voeun Chhaya	M	Official	IRD, FA	012400838
7	Muong Chet	M	Official	IRD, FA	0988316261
8	Suong Van	M	Community Leader	Domrey Chathlork Community Forestry	015555981
9	Kim Kieng	M	Member	Dopor	069380051
10	Men Thun	M	Member	Dopor	-
11	Hor Horn	M	Member	Dopor	-
12	Em Sim	M	Member	Domrey Chathlork Community Forestry	-
13	Son Suen	M	Community Committee	Domrey Chathlork Community Forestry	086248420
14	Huot Nheng	M	Community Committee	Domrey Chathlork Community Forestry	015764652
15	Yu Yen	M	Community Committee	Domrey Chathlork Community Forestry	096388248
16	So Sarm	F	Village Member	Domrey Chathlork Community Forestry	0962506741
17	Verb Chim	M	Community Committee	Domrey Chathlork Community Forestry	-

Annex 7: Term of Reference

TERMS OF REFERENCE

Projects Evaluation of “Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Cambodia) [2017P2-CAM]” and “Reconstruction and Sustainable Management of Degraded Forests Based on the Combination of Inter-planting Nitrogen Fixation Rare Tree Species and Thinning [2018P4-CAF]”

1. Background

In accordance with APFNet Annual work plan (2022), it is to conduct Terminal Evaluation for two projects that based in Cambodia, including “*Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Cambodia) [2017P2-CAM]*” and “*Reconstruction and Sustainable Management of Degraded Forests Based on the Combination of Inter-planting Nitrogen Fixation Rare Tree Species and Thinning [2018P4-CAF]*”.

This package Terminal Evaluation (TE) undertaken at completion of the two projects, is to assess project performance, and determine outcomes and impacts stemming from the projects, specifically seeks to:

- Assess whether the goal(s) and objectives of the projects are met, summarize the achievements of the projects, identify issues/challenges and lessons learnt from the projects;
- Provide evidence of results to meet accountability requirement;
- Analyze the achievements, impacts of the projects for better promotion and dissemination;
- Give recommendations for future project planning, management and implementation.

2. Project description

- Title: Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Cambodia) [2017P2-CAM]
- Duration: June 2017–June 2021, extension to June 2022
- Budget in USD (Total/APFNet grant): 1,792,663.60/1,515,465.60
- Executive Agency: Institute of Forest and Wildlife Research and Development (IRD), Forestry Administration, Ministry of Agriculture, Forestry and Fisheries, Cambodia
- Goals& objectives: The goal of this project is to rehabilitate ecological services and product provision of forests in Cambodia through improvement of community forest management and strengthening state-owned forest conservation, so as to contribute to sustainable forest management in Greater Mekong Sub-region, with the following objectives to be achieved:
 - (1) To develop a model for community forest management by strengthening CF management and testing appropriate restoration and silviculture technology;
 - (2) To mitigate the dependence of community to forests by improving household farming systems;
 - (3) To enhance forest protection through adopting advanced forest monitoring system (Forest Watcher); and
 - (4) To extend achievements and related techniques in Cambodia and GMS by demonstration and experiences sharing.
- Title: *Reconstruction and Sustainable Management of Degraded Forests Based on the Combination of Inter-planting Nitrogen Fixation Rare Tree Species and Thinning [2018P4-CAF]*
- Duration: April 2018–March 2021
- Budget in USD (Total/APFNet grant): 503,000/378,000

- Executive Agency: Institute of Forest and Wildlife Research and Development (IRD), Forestry Administration, Ministry of Agriculture, Forestry and Fisheries, Cambodia
- Goals& objectives: The goal of this project is to increase the level of forest resource restoration and promote forest sustainable management in Cambodia through the establishment of demonstration forests and technical personnel training, with the following objectives to be achieved:
 - (1) To demonstrate effective approaches on degraded forest transformation to improve the growth and quality of the forest stand and enhance ecological services by enhancing forest restoration and sustainable forest management;
 - (2) To improve the livelihood of the local forest dependent people and those living in poverty;
 - (3) To share information and knowledge of best practices on forest restoration and rehabilitation.

3. Evaluation scope

The evaluation usually looks at project planning, implementation and management comprehensively, it is a systematic and objective examination concerning the relevance, effectiveness, efficiency, impacts and sustainability of activities in the light of specified objectives.

For the project *“Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Cambodia) [2017P2-CAM]”*, the TE is expected to cover the following project components:

- (1) Formulation of Community Forestry Management Plan;
- (2) Demarcation and patrol of Community Forestry boundary;
- (3) Improvement of a Forestry Administration triage nursery;
- (4) Establishment of restoration and silviculture models;
- (5) Establishment of village water supply system;
- (6) Establishment of agroforestry farming system;
- (7) Establishment of Homegarden farming system;
- (8) Installation and maintenance of Forest watcher system and auxiliary facilities;
- (9) Assembling of an integrated forest management technology and formulation of a technical handbook;
- (10) Demonstration and dissemination of experience and technology.

For the project *“Reconstruction and Sustainable Management of Degraded Forests Based on the Combination of Inter-planting Nitrogen Fixation Rare Tree Species and Thinning [2018P4-CAF]”*, the TE is expected to cover the following project components:

- (1) Explore and demonstrate effective approaches on degraded community forests, optimize the forest structure, and improve forest ecosystem services;
- (2) Livelihood building activities beyond forestry-based activities are developed;
- (3) Information and knowledge of best practices on degraded forest restoration and rehabilitation in Cambodia are shared.

4. Deliverables

The outputs of the mission include:

- (1) Evaluation Plan. The plan should be concise within 5 pages, and should cover but not restricted to the following aspects:
 - Background information of the projects (context, significance, goal/objectives/outputs) and any other information that the consultant learnt about the project and the field sites.
 - Evaluation mission (purposes);
 - Explicit the evaluation scope and priorities (what is to be assessed);

- Evaluation criteria and indicators, and questions (according to what to assess);
- Proper methods & approaches of collecting & analysing data (based on what to and how to assess);
- Expected outputs;
- An evaluation report format;
- Attach/list other supporting documents (such as questionnaire, scoring sheets, etc.).

(2) Two Terminal Evaluation Reports (for each project). The report should:

- Contain an executive summary (mandatory);
- Be analytical in nature (both quantitative and qualitative);
- Be structured around issues and related findings/lessons learnt; , and also include as much as possible the Concerning points about the project that APFNet raised;
- Include conclusions and recommendations.

5. Duration and consultancy

The total duration of the evaluation will be up to 18 days within the period of [June/2022] to [September/2022], and the main tasks include:

Duration	Tasks	Activities
<i>June-July</i>	<i>Preparation</i>	Collection of and acquaintance with the project document, project progress reports and other relevant project-related materials;
		Submitting the Evaluation Plan to APFNet M&E Division
		Setting up the mission dates and preparation of the detailed mission programme in cooperation with the APFNet Officer (The Project Officer will coordinate the schedule of the mission, arrange transportation for the consultant and translation/interpretation, when necessary);
<i>August</i>	<i>Field site visit</i>	Visit to project sites in Cambodia;
		Meeting with the Project Director and project management officials;
		Present the preliminary evaluation results to key project stakeholders; Debriefing with APFNet;
<i>By September 15th, 2022</i>	<i>Elaboration of the draft report</i>	Additional desk review, intensive analysis on the data/information collected;
		Drafting the reports and send to APFNet for review and comments;
<i>By September 25th, 2022</i>	<i>Elaboration of the final report</i>	Incorporation of comments and additional findings into the draft report;
		Finalize of the reports, and send to APFNet for final approval.

6. Consultant required qualification and performance indicators

The required qualification for the consultant includes:

- Professional knowledge on forest planning and resources management;
- Sound knowledge and understanding of SFM strategies in the Asia Pacific region;
- Professional knowledge on development programme monitoring and evaluation.
- Experiences in conducting project midterm/terminal evaluations as added advantage;
- Advanced university degree (Master or higher level) in Forestry, Natural Resources Management, Sustainability, Project Management or related field;

- A minimum of 3 years' experiences in the field of monitoring and evaluation;
- Fluency in English with excellent communication skill (oral, written and speaking).

The performance indicators for the consultant include:

- Timely submission of outputs;
- Quality of synthesis and summarizing of the findings from the task;
- Readability, credibility and consultancy of the outputs.

8. Terms of Payment

- (1) The consultancy fee for the service is USD 5400(pre-tax)(USD300]/day,18 days);
- (2) Payments will be based on the Performance indicators for the consultant that set in this Terms of Reference;
- (3) The Consultant will be paid in a lump sum upon the approval of the deliverables of APFNet.