



Japanese International Cooperation Agency (JICA)
Sustainable Natural Resource Management (SNRM) Project

ACTIVITY ASSESSMENT REPORT
SUSTAINABLE NATURAL RESOURCE MANAGEMENT (SNRM)
PROJECT
PILOT REDD+ ACTIVITIES IN DIEN BIEN PROVINCE

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ABBREVIATIONS

PFES	Payments for forest environmental services
JICA	Japanese International Cooperation Agency
MARD	Ministry of Agriculture and Rural Development
ODA	Official development assistance
PRAP	Provincial REDD+ Action Plan
REDD+	Reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks
SNRM	Sustainable Natural Resource Management
SUSFORM-NOW	Sustainable Forest Management in the Northwest Watershed Area
DARD	Department of Agriculture and Rural Development
PPC	Provincial People's Committee
PPMU	Provincial Project Management Unit
CPMU	Central Project Management Unit
CPC	Commune People's Committee
FEMB	Forest and Environment Management Board
VMBFMLD	Village Management Board for Forest Management and Livelihood Development
FPT	Forest Patrolling Team
VF	Village Fund
SUF	Special-Use Forest
HH	Household

General Introduction

The Sustainable Management of Natural Resources (SNRM) Project in Dien Bien province has selected Pa Khoang commune, Dien Bien district as a target area to implement REDD+ pilot activities. After the first kick-off commune workshop that aimed to introduce about the project organized in 2016, villagers in 21 villages have agreed to participate in the project. In the second and third village meetings, villagers took part in formulation of five-year (2016-2020) and annual (2017-2018) pilot activity plans on forest management and livelihood development. The project activities were approved by the relevant units and implemented as agreed schedule.

The monitoring and evaluation carried out after nearly two years of implementation of REDD+ pilot activities in Dien Bien aim to report on project achievements and share lesson-learnt among project staff and other stakeholders. The M&E framework includes three components namely:

1. Partner institutional assessment
2. Project activity implementation assessment (internal assessment)
3. Assessment by topic: case study

I. Partnership in management and implementation of SNRM Project in Dien Bien Province

Partnership is an integral part of the SNRM project in Dien Bien province from the beginning to the end, just like other programs/projects in Vietnam. The partnership is to ensure the smooth, timely and effective coordination and support of stakeholders in project management, implementation, monitoring and evaluation.

The SNRM project is managed in one consistent and rigorous way from central to local level to ensure its effectiveness. There are different partners at different level such as PPC, DARD, PPMU, and VMBFMLD. Without coordination with partner agencies, the Project wouldn't have been able to carry out activities successfully. Therefore, the Project staff understand that partnership development with stakeholders is an important task, which contribute to the success of the project.

Since the kick off workshop of the Project in Dien Bien province, relationships with partner agencies have always been developed based on the principle respect. The coordination and support of partners in project management and implementation have contributed to the success of the SNRM project in Dien Bien Province so far.

2.1 Partnership with CPMU

Ministry of Agriculture and Rural Development (MARD) has issued Decision No. 3890/QĐ-BNN-TCCB dated 29/9/2015 to assign the project ownership role to MBFPs when it is agreed to be commence in 5 provinces. The MBFPs has carried out activities in the provinces as agreed.

According to the Decision No. 1002/QĐ-BNN-TCCB dated March 27, 2017

of Minister of MARD, was established¹. The CPMU represents MBFPs in administrative management and implementation of the project activities at the national level and is responsible for ensuring project progress, quality and achievement of objectives. With the above-mentioned roles, the CPMU regularly exchanges information with PPMUs to solve problems and to share lessons-learned.



Image 1. PRAP announcement workshop organized by CPMU



Image 2 : CPMU's member monitoring project activities

The SNRM project in Dien Bien province always pays close attention to partnership development with the CPMU. Thanks to the good relationship, the project activities in Dien Bien always receive attention and effective support from the CPMU. The CPMU has paid visits to and worked in Dien Bien province to direct and participate in monitoring and evaluation of project activities in relation to development of PRAP and REDD+ pilot activity plan.

In 2017, the CPMU held two meetings that aimed to evaluate results of the project. Representatives of the Project Office and Dien Bien PPMU attended these

¹ Appendix 1 – Decision on establishment of CPMU

meetings. In addition, in December 2017, with the advice of the CPMU, MARD has issued a Regulation on Project Organization and Management, which is an important for Dien Bien PPMUs to tailor its own regulation on project management and coordination with other stakeholders within the province.

- ➔ Although the CPMU has effectively supported the SNRM Project in Dien Bien to perform their work to meet schedule and quality requirements, the regulation on project management and operation was late issued by the CPMU, so it partially impacted the progress of establishment of the PPMU in Dien Bien.

2.2 Partnership with Dien Bien PPMU

During the provincial workshop organized Dien Bien, Dien Bien DARD leaders have assigned officials to engage in project management and implementation. Dien Bien PPMU was established on January 23, 2017 according to the Decision No. 68-QD-UBND of Dien Bien PPC with the total of 13 members.² The PPMU is responsible for managing and arranging project implementation in Dien Bien province to ensure achievement of project objectives.



Image 3. Meeting of PPMU on project implementation plan

Since the first day of PPMU establishment, Dien Bien Project staff and consultants always work closely with them to manage and carry out the project activities. Every month, the PPMU holds a meeting on project progress and plan for the following month, as well as identification of solutions to address difficulties in implementing the project.

Dien Bien project staff and Japanese experts have attended the monthly meetings organized by the PPMU. In the beginning of January 2018, the PPMU held a meeting on reviewing project achievements in 2017 and developing an action plan for 2018. The PPMU has assigned its members to support the project in implementation to ensure project progress and quality requirements. The PPMU has

² (Appendix 2 – Decision on PPMU establishment)

also assisted the Project Office in issuing written notices to the Muong Cha and Dien Bien DPCs as well as to other related agencies requesting for their support and staff assignment to participate in monitoring SUSFORM-NOW project implemented in Muong Muon and Muong Phang commune. Thanks to the strong partnership, the SNRM project has received a lot of timely and effective support from the PPMU in carrying out the project activities such as REDD + pilot activities, forest development monitoring, and PRAP development, etc. In addition, the PPMU has worked closely with the Project Office to work with Japanese experts and other delegations. The PPMU has also worked with the Project Office to register, manage and use the project motorbikes and van.

➔ The PPMU has effectively coordinated and supported the project including administrative work, implementation, and quality control.

2.3 Partnership with Dien Bien DPC

Dien Bien DPC has assigned Deputy Chairman of the DPC and a member of the District Agricultural Extension Station to be members of the PPMU. In addition, other agencies/departments such as the DARD, the Agriculture and Fisheries Extension Station, the Forest Protection Department, the Natural Resources and Environment Division, the Department of Justice at district level have elected their people to participate in the project activities, being members of PMU or being facilitators of the project.



Image 4. District staff being members of the PPMU providing technical guidance to the local people

The Dien Bien DPC and other related departments/agencies have been participating in and contributing to the project implementation. They play an important role in planning and implementing the project activities to ensure it meets the needs of beneficiaries and helps to achieve project objectives. Dien Bien DPC

and other related departments/agencies have actively participated in the project activities during the past time. Particularly, they have participated in different consultation workshops on PRAP development, forest change monitoring activities, and assigned staff to participate in REDD+ pilot activities in Pa Khoang commune. In addition, Dien Bien DPC assigned staff who used to be facilitators of the SUSFORM-NOW project to follow-up the results of the project in Muong Phang Commune.

➔ The Dien Bien DPC has supported the project in implementing and monitoring the REDD+ pilot activities in Pa Khoang commune.

2.4 Partnership with Pa Khoang CPC

Pa Khoang Commune is the only area selected as a pilot commune to implement REDD+ pilot activities of the SNRM Project. This level directly implements and being benefited from the pilot activities. Therefore, the partnership with the CPC generates great impacts on the implementation of the Project pilot activities. Understanding the importance of building partnerships with the locality, the project is always being active in building and developing a partnership with Pa Khoang CPC. The Project Office in Dien Bien regularly consults and discusses with the CPC about all activities of the project carried out and to be carried out in the commune in order to strengthen the partnership and ensure the broad participation of the commune authorities in the project activities in the locality.



Image 5. Meeting organized in Pa Khoang commune on project plan

Pa Khoang CPC appointed two commune officials (one of them is Vice Chairman of CPC) to be members of the PPMU. In addition, Pa Khoang CPC has requested commune officials to support the project. The plans of every village are reviewed and compared with the commune socio-economic development plans and approved by the CPC. This helped increasing the ownership of the commune to the project activities carried out in the commune while ensuring the integration and linkage between the project activities with socioeconomic development plan of the commune.

Leaders of Pa Khoang CPC have fully participated in Project events/workshops

that held at provincial and commune levels. In addition, Pa Khoang CPC always supports the Project by assigning its officials to participate and regularly direct and urge village heads and VMBFMLDs to work closely with Dien Bien Provincial Project Office to effectively arrange and implement activities aimed at maximizing the benefits to the people.

- ➔ Thanks to the participation of CPC, the activities carried out by the project really contribute to improve effectiveness of forest management and local livelihood development, which is in line with the socio-economic development plan of the commune.

2.5 Partnership with facilitators

In order to have a support team to support implementing pilot activities in Pang Khoang Commune, Dien Bien PPMU has decided to form a Project Facilitator Group in August 2016 with a total of 13 members, two of them are agricultural extension staff of Pa Khoang CPC, three are Dien Bien district officials, and 7 of them are from Muong Phang Historical and Environmental Forest Management Board.



Image 6. Facilitators of the SNRM Project in Dien Bien Province

The Project Facilitator Group members work on concurrent principle, where they are supported by their heads to best participate in project activities. The main tasks of the facilitator team are to assist the Project in planning, implement pilot activities in the commune, and advise the PPMU in monitoring and supervision of the project activities.

Understanding the importance of the Facilitation Team, Dien Bien Project Office always pays close attention to developing and maintaining a strong relationship with this group through building capacity for them with trainings. The facilitators were assigned to manage project activities in each village. They were trained to support the villagers and invited to involve in all pilot activities of the project in Pa Khoang Commune, from planning to implementation and monitoring stage.

- ➔ The participation of the Facilitators has enabled the project activities to be carried out smoothly and efficiently. They not only provide technical support but also act as a linking bridge of project staff and other stakeholders/villagers.

However, during the implementation of the project, there was one facilitator who moved to a new position in a new location and could not commit to the end of the Project. Nobody replaced him as one of the members in the team can take his role in forest management.

2.6 Partnership with VMBFMLD

The VMBFMLD was established during the second village meeting in order to prepare for a 5-year village action plan. The VMBFMLD is established by votes of villagers who work under community-based principles. Actions of the VMBFMLD will be supervised and monitored by related stakeholders and villagers. The main task of the VMBFMLD is to collaborate with the project staff and facilitators to plan, implement, monitor and supervise project activities in the community. In Pa Khoang commune, 21 VMBFMLDs were established based on the project guideline. The working regulations of the VMBFMLDs have been developed and approved by Pa Khoang CPC³.

Pilot activities are mainly carried out in the community, so the VMBFMLDs play a very important role in mobilizing villagers' participation in project activities. The Dien Bien Provincial Project Office has built a very close and strong relationship with the VMBFMLDs by regularly exchanging and agreeing with the members of VMBFMLDs on relevant issues before, during and after implementation. The VMBFMLDs participate in all activities of the project in the community as organizers and mobilizers. In addition, the VMBFMLDs also act as supervisors, who regularly reflects and communicates the results of the project in the community to Facilitators and Project Officers.

In order to build the capacity for members of the VMBFMLDs, the Project not only organize trainings for them but also regularly liaise with them to guide and promote them to enhance their work in implementation and monitoring of project activities in the community.

- ➔ The work of the VMBFMLDs is a key factor for increasing the effectiveness of the project activities in the community that helps the activities of the project meet the needs of the local people.

However, some VMBFMLDs have not fully performed their roles nor taken responsibilities, thus, monitoring activities remained poor, and contribution to the Village Fund has not fully be sufficient.

2.7 Partnership with Muong Phang Forest and Environment Management

³ Appendix 4 – village operational regulations

Board (FEMB)

A special feature of the SNRM project partnership in Dien Bien is the relationship with Muong Phang FEMB. In Pa Khoang commune, all special-use forest areas are managed by the Muong Phang FEMB. In addition, Muong Phang FEMB also manages agricultural extension section in the commune.



Image 7. Meeting on action plan with Muong Phang FEMB

Muong Phang FEMB has appointed one leader to be a member of the PPMU and eight staff to be facilitators of the project (5 forest management staff and 3 extension workers). Therefore, in order to implement the project activities, the Project Office has worked with the Muong Phang FEMB to develop plans to avoid duplication and ensure that all activities of the project have participation of the facilitators. Muong Phang FEMB has also requested additional staff to assist the project, when needed. All activities of Muong Phang FEMB and of the project are to contribute to achievement of the project objectives and the FEMB goals, particularly in:

- Establishment/re-establishment of FPTs in 21 villages with a view to protect not only production forests, but also special-use forests those are under management of Muong Phang FEMB.
- Af/reforestation and forest regeneration of the project contributed to increase forest area and stock of special-use forests.
- Identification of the village boundaries was based on the special-use forest map of the Muong Phang FEMB.
- Revision of village regulations on forest protection and development was partly based on the special-use forest protection regulation and Forest Master Planning of Muong Phang FEMB.
- Most of the livelihood development activities of the project were included in the extension plan of the Muong Phang FEMB.
- Project staff were invited to contribute ideas and support to most of the forest management activities of Muong Phang FEMB.

➔ Thanks to the cooperation of Muong Phang FEMB, the project has implemented its activities effectively.

II. Integration/mainstreaming

1. Gender mainstreaming

During the project implementation, the project office in Dien Bien always pays attention to importance of gender equality issue, which is mainstreamed into the project activities.

- Gender equality issue was taken into account while establishing facilitator groups and PPMU, where 5 out of 13 facilitators are women, 3 out of 13 members of the PPMU are women.
- The number of women and men who were invited to participate in the village meeting on project work planning was equal. During discussions, women are encouraged to participate and contribute their ideas. The project focuses on activities that are designed for men and women.
- When organizing activities, the Project mobilizes equal participation of men and women, contributed ideas are respected equally. However, due to the specific nature of some activities, participation by gender is different. For example, for bee keeping, the Project recorded 100% of male participants, but for vegetables cultivation, majority of participants are women. This does not indicate gender differentiation in project activities but reflects respect for the advantages and strengths of each gender in each specific activity of the Project.

The number and percentage of women participating in the training and meetings are shown in the following table:

Table 1. Women who attended trainings and meetings

Activity	Participants	Women	%
Trainings	3,559	1,624	45.6
Meetings	9,687	3,106	32.0

(Source: Project monthly reports)

III. Evaluation on the results of REDD+ pilot activities in Dien Bien province

1. Establishment of community organizations and institutional development

A community is an organized body, consisting of individuals living in a particular area, sharing a certain social or biological character and sharing a physical or mental benefit. For community development, community-based organizations and institutional development should be established. Community arrangement is a process that consists of selecting and exploring the community, fostering core persons to form and develop collaborative community organizations. Establishing community-based organizations that empower communities to develop community ownership and ensure that project outcomes are effective and sustainable for the community.

Community organizations established by the SNRM Project in Pa Khoang are as follow:

- 21 VMBFMLDs
- 21 FPTs

Revised regulations and institutional development:

- Operational regulations of the VMBFMLDs;
- Operational regulations of the FPT;
- Village regulations on forest protection and development;
- Regulations on livelihood development;
- Village Fund for Forest Management and Livelihood Development (Village Fund);

Community organizations and related agencies have their roles and responsibilities as follows:

1.1 Establishment of VMBFMLD

In order to receive effective contribution of the community, the project has encouraged communities to establish community-based organizations such as the VMBFMLDs and the VF. The VMBFMLDs were established shortly after the third village meeting to prepare the annual project plan. The VMBFMLDs was established with the objectives as following:

1. Coordination of forest management and livelihood development activities;
2. Ensure that the villagers strictly comply with all village forest management regulations and plans;
3. Ensure that all village livelihood development activities are implemented as in accordance with current plans and regulations as well as technical requirements;

4. Ensure micro finance is in effective circulation as in accordance with the regulations;
5. VF operations;
6. Cooperate with CPC to resolve conflicts in forest management or livelihood development;
7. Coordinate with Commune and local forest rangers in the process of implementing and supervising project activities.

In Pang Khoang commune, 21/21 villages agreed to participate in the project activities, thus, the Project Office agreed with Pa Khoang CPC to establish 21 VMBFMLDs. Each VMBFMLD has 5 members:

1. Head of the VMBFMLD cum either Village Head or village Party Secretary
2. Deputy Head of the VMBFMLD cum Vice Head of the village
3. Secretary of the VMBFMLD cum head of any village association/union.
4. Accountant of the VMBFMLD cum head of any village association/union
5. Supervisor of the VMBFMLD cum head of any village association/union.



Image 8. Members of the VMBFMLD of Nghiu1 village

The members of the VMBFMLD were elected by the villagers through the third village meeting.

The operational regulation of the VMBFMLD was developed that facilitates the VMBFMLD to achieve its working goals.

1.2. Carried-out activities with participation of the VMBFMLD

Since the beginning of establishment, key members of the VMBFMLD have been involved in the following activities:

- Participate in the five year and annual work planning of the project.
- Agree on implementation of activities in the village
- Hold village meetings to receive registration of households participating in forest management and livelihood development activities in the locality.

- Review and check the capacity of households prior to implementation
- Collect and manage village fund.
- Participate in the implementation and supervision of project activities.

Moreover, the VMBFMLD is also responsible for managing VF, which contributed by households who participated in fish raising, fruit tree planting, and Laos stove activities. The VMBFMLD also deducts a part of PFES and deposit to the VF to support for forest management and livelihood development activities.

The collection of the VF was checked from January 2018 shown in the below table.

Table 2. VF collection

Activities	Planned amount	Actual collection	To be collected
1. Fish raising	305,451,500	259,201,000	46,250,500
2. Fruit tree cultivation	133,910,000	107,723,750	26,186,250
3. Laos stoves	18,900,000	18,900,000	0
Total	458,261,500	385,824,750	72,436,750



Image 9. VF checking in Vang 1 village

Status of VF management and use is as in the below table 3.

Table 3. Status of VF management and use

1. Collection	394,934,750 VND
2. Spending	233,466,250 VND
3. Balance	161,468,500 VND

The actual collected money from the local HHs who received Project support reached 84%. Twelves out of 21 villages have completed the contribution/collection

for the VF. Most villages use VF to support the FPTs and if available, micro finance is given to the local people for livelihood development.

In some villages, few HHs have not contributed to the VF due to difficult economic conditions but wait for exemption as their fish raising and fruit tree cultivation affected by natural disasters. The project has conducted a number of visits to check the VFs to ensure that it is managed properly as in accordance with the regulation, and to provide proper solutions to problems encountered during the management and operation of the Fund.

1.3. Encountered problems

According to the current political structure, there is a party cell, local government, and an organization in each village. Thus, the establishment of a new VMBFMLD is considered unnecessary.

Members of the VMBFMLDs were not active in the project activities. Majority of the work has been carried out by the Head of the VMB without support from other members.

Compliance with the Forest Protection and Development Regulations of the community was not good in general. Awareness raising for the local people was not paid with attention, so many people do not clearly know the provisions of the regulation on forest protection and development.

The recording of VF transactions was incomplete, or not accurate. It was recorded that some outgoing transactions were not recorded as in accordance with the Fund Management Regulation.

Currently, there is a fund used for village activities, so establishment of a new VF may not facilitate the person who manage both funds at village level at the same time.

1.4. Lesson-learned

With the aim of implementing, monitoring and managing the project, more community organizations should be established to ensure sustainability and ownership of the community to the Project activities. In addition, it is important to promote local community organizations to engage into the project to reflect their core role and to make the community aware that organizations or institutions in the community is for and by the community.

The widespread deployment of the Project activities may cause difficulties for the monitoring and affect the quality of the project activities. The VMB could not control or guarantee if the local people follow properly technical requirements. More demonstration models should be built for the local people to learn, instead of implementing all activities massively at the same time.

Few members of the VMB still do not clearly understand their roles and responsibilities so they still bear in mind that doing project work is for project benefits

but not for themselves and their community. It is necessary to help them being active and self-confident to deal with problems that they may encounter during development and avoid dependence on external resources.

2. Establishment of Village Forest Patrolling Teams (FPTs)

2.1. Introduction

Pa Khoang commune was separated from Muong Phang commune, Dien Bien district on July 1, 2013 according to Resolution No. 45/NQ-CP dated 25th August 2012 of the Government. The natural area is 5,714.7 ha, a part of Nam Rom river watershed forest system, of which, forestry land occupies the largest area with 4,371.98 ha, accounting for 76.5% of the total area of the commune. The forest of the Pa Khoang Commune plays a very important role in protecting and regulating the water source of Pa Khoang Lake, supplying water for Muong Thanh field and four hydro-power plants (Trang waterfall, Pa Khoang, Bay waterfall and Na Noi), regulating climate control and facilitate eco-resort services for Dien Bien City.

There are six ethnic groups in Pa Khoang, namely Thai, Kho Mu, H'Mong, Kinh, Muong and Dao, where Thai ethnic group accounted for the highest proportion of 62%, followed by the Kho Mu 37%, and 1% for the remaining four ethnic groups. Therefore, the customs, habits and agricultural practice of the local people are mainly followed the traditional way of Thai and Kho Mu ethnics.

Pa Khoang commune is one of the extremely difficult communes. According to the survey results, the percentage of poor and near poor HHs in 21 villages still accounts for 51% and 23% of total HHs. Meanwhile, the proportion of rich and poor households is very small, only 4%.

Forest and forestry land area of Pa Khoang commune is divided into 2 categories: (1) Production forest; (2) SUF. The area of land covered by forest is 2,149.70 ha, accounting for 54.07% of the forestry land area. The table below describes the area of forests and forestry land planned for the two above-mentioned functions.

Table 4: Area of forests and forestry land by category

Forest category	Area (ha)
Production forest	1,534.39
Forests	553.80
Non-forest land	980.59
SUF	2,441.21
Forests	1,595.90
Non-forest land	845.31
Total	3,975.60

Source: Report no. 117 on socio-economic status in Pa Khoang commune (2015) and planning method for SUF, Muong Phang FEMB

Forests and forestry land in Pa Khoang commune were allocated to 4 units: (1) Muong Phang Forest Management Board who manages 967.06 ha; (2) The village community who manages 293.87 ha; (3) HHs who manage 16.86 ha; and (4) Pa Khoang CPC who manages 2,816.98 ha. From the Table 13, state forestry enterprises, non-state economic organizations, armed force units, HHs, village communities and socio-political organizations are not allocated with forestry land, they only participate in forest management and protection as contractors.

Table 5: Status of forestry land allocation in Pa Khoang commune

No.	Forest owner	Forest category			By function			
		Planted forest	Natural forest	Bare-land	Production forest		SUF	
					Forests	Bare-land	Forests	Bare-land
1	Forest Management Board	4.7	962.36	0			967.06	
2	Enterprise							
3	Economical organizations							
4	Armed force units							
5	HHs		16.86		16.86			
6	Community	11.57	282.3		293.87			
7	Other organizations							
8	CPC	16.34	855.57	1,825.90	243.07	980.59	628.84	845.31
Area (ha)		32.61	2,117.09	1,825.90	553.8	980.59	1,595.9	845.31

(Source: Forest Allocation Plan for Muong Phang Forest Management Board and PFES 2015)

Forest management, protection and use in Pa Khoang commune has been systematically organized with the participation of HHs, village communities, forest management and use units, State units, law enforcement units, and local authorities.

Functions and tasks of the involved parties in the management and protection of forests are outlined as following:

- The CPC has established 21 village FPTs, each consisted of 8 to 16 members, who are a key force, together with villagers, in the forest protection and firefighting.
- CPC signs forest protection contracts with households and communities.
- Muong Phang Forest Management Board has signed contracts with village communities and organisations, accordingly, these communities and organisations are responsible to manage the entire SUF area in the commune.
- Muong Phang Forest Management Board works with local forest rangers, CPC and DPC to enforce law on forest protection and development as well as handle violations.
- Strictly enforce regulations on forest harvesting and use; all illegal logging and forest product collection are prohibited; HHs are allowed to collect firewood, bamboo shoots, mushrooms and other non-timber forest products to meet their daily needs.
- CPC coordinates with Muong Phang FMB, local forest rangers to monitor and evaluate the results of forest protection and management activities by the HHs and village communities to identify forest location and quality for PFES.

Challenges/difficulties encountered during forest protection and development process

- (1) Income/profits from planted forest and non-timber forest products are low;
- (2) Lack of production land, grazing pasture and land for other sectors' needs;
- (3) The demand for wood, firewood, bamboo, and NTFPs is increasing;
- (4) Financial resources for forest protection and management are limited, mainly from PFES source;
- (5) Institutional arrangements for forest protection and management are not well developed. Particularly, the Law on Forest Protection and Development is not strictly enforced; the regulations on forest protection and development (if any) has been formulated long time ago with many provisions are no longer valid;
- (6) The current organizations/teams for forest patrolling and protection have not met the practical requirements yet. In the past, village FPTs were established but their performance is still below expectation.

Therefore, forests and forestry land in 21 target villages in particular and in Pa Khoang commune in general are under great pressure. This is also considered as a challenge for forest protection and development work. Therefore, forest protection is an urgent matter that needs attention and support.

2.2. Theory basis and lesson-learned from other areas

a) Theory basis

According to assessment of environmental protection organizations in the world, Viet Nam is considered as one of the countries most affected by climate change. Therefore, in the past years, forest protection and development has been paid more and more attention by different sectors at different levels. Specifically, a number of decisions and resolutions on forest protection and development have been developed and approved.

Law on Forest Protection and Development No. 29/2004/QH11, Session VIII of the XIth National Assembly of the Socialist Republic of Vietnam;

Decree No. 23/2006/ND-CP of March 3, 2006, on the implementation of the Law on Forest Protection and Development;

Decision No. 57/QD-TTg dated 9 January 2012 of the Prime Minister approving the forest protection and development plan for 2011-2020 period;

Decision No. 516 / QD-BNN-KHCN of February 18, 2002 of the MARD on promulgation of designing process for afforestation;

Decision No. 38/2005/QD-BNN of July 6, 2005, of the MARD on promulgation of economic and technical norms for afforestation, forest regeneration and protection;

Decision No. 4713/QD-BNN-HTQT dated 15 November 2016 of the MARD approving the project of "Sustainable Natural Resource Management" funded by the Japanese Government;

- Decision No. 1641 QD / BNN-HTQT, dated 5 June 2006 of the Minister of MARD approving the project "Community-based Forestry Pilot Program 2006-2007";

- Decision No. 106/2006/QD-BNN on promulgation of Village Community Forest Management Manual;

- Circular No. 23/2016/TT-BNNPTNT dated 30 June 2016 of the MARD guiding number of provisions on silvicultural work management;

- A Report of Discussion dated July 9, 2015 between representatives of Vietnam and JICA on the project "Sustainable Natural Resource Management";

- Decision No. 76/QD-UBND dated January 14, 2008 of Dien Bien PPC approving the results of forest reviewing and planning by three categories for 2006-2020 period; Decision No. 714/QD-UBND dated 16 September 2013 of Dien Bien PPC approving the conversion of forest by 3 forest categories in Dien Bien province;

- Decision No. 1549 / QĐ-UBND dated December 16, 2016 of Dien Bien PPC promulgating list of forest tree species that encourage to be planted as in accordance with incentive policies for af/reforestation; assigning and approving design document

and budget estimation for development of production forests, NTFPs, and protection forests in Dien Bien province;

b) Lesson-learned from other areas

The results of forest protection and development in many places in Vietnam show that it is necessary to bring into full play the strength of local communities living in forests for successful forest protection and development.

- In Ha Giang province, a model of community-based forest management has been implemented successfully in Phu Lung commune, Yen Minh district. The lesson learned from the model is that the local households in the village were clearly understand that forest management and protection is responsibility of the whole villagers but not of any single individual nor someone who were selected and elected to be members of the village FPTs.

- In Nghe An province, while learning about the success of the community-based forest management and protection model in Tam Dinh commune and Xa Luong commune, Tuong Duong district, the author drew on a lessons learned: "Accordingly, the core of the planning is to keep the forest from the root, i.e., relied on local people's enthusiasm and tradition for forest protection. Since then, more mechanisms should be built to support spreading the model throughout the community."

However, community-based forest protection in reality also faces many difficulties.

- Due to the complexity of topography and population distribution, "the majority are ethnic minorities, living in the forest area, relying on forests, and their forest related deep-seated customary customs that lead to fragmented tree cutting". Violators of the forest protection regulations are often the people in the locality "so it is very difficult to denounce the forest destroyers because of the problem of brothers and family."

2.3. Carried-out activities

a) Re-establishment of FPTs

Since 21 village forest protection and management teams have been established before in 21 villages of Pa Khoang commune, the strengthening to the FPTs has been implemented since the end of 2016. Through direct discussion with the village community through 3 village meetings in each, the community is the person who decided the organizational model of the village FPTs. As a result, during the 3rd village meeting (organized in October 2016) 21 forest protection patrol teams were strengthened (1 team per village) with total number of 265 members as in accordance with decision of the Commune People's Committee.

b) Develop and finalize the operational regulation

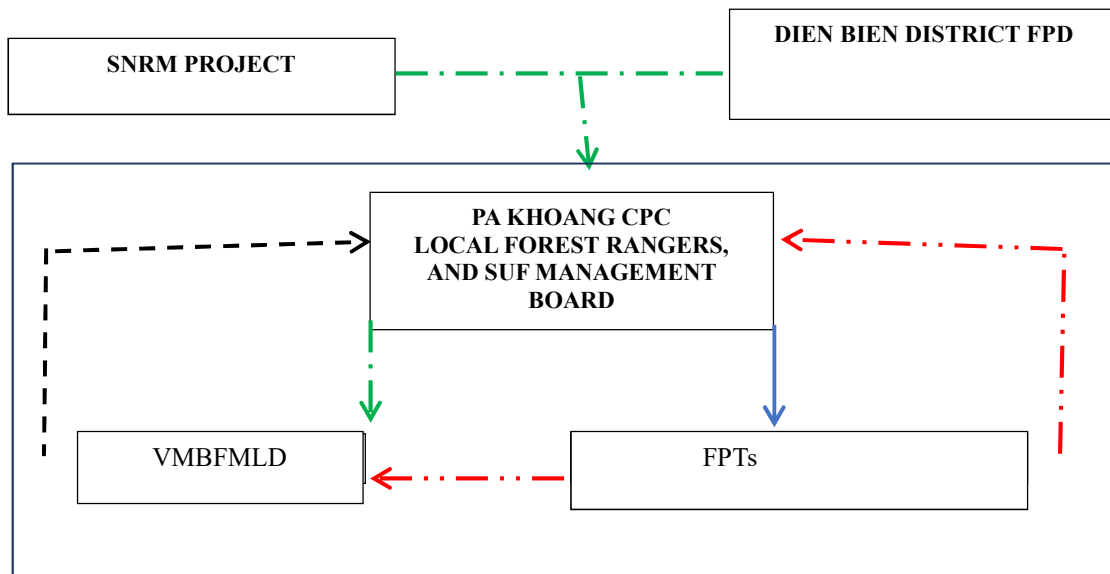
From the end of 2016 to March 2017, the Project supported to develop operational regulations to the village FPTs.

Steps of development of the regulations are as follows:

+ Step 1: Collection of related documents.

- + Step 2: Draft of the regulation outline;
- + Step 3: Meetings with key persons of the villages;
- + Step 4: Organize village meetings to publicize the content of the draft regulations and get comments from the public on the draft. Based on the comments, the regulations were improved and finalized. Finally, the content of the regulations agreed by the people who participated in the village meeting.
- + Step 5: Submission and approval;
- + Step 6: Communicate the content of the regulations to every villager

Chart 1: Organizational structure of the FPTs



- Notes:
- Monitoring and assistance
 - · · -→ Reporting on results
 - - -→ Monitoring report
 - · · -→ Support and promotion

c) Capacity building

- **Technical trainings for members of 21 FPTs**

From April 15-26, 2017, the SNRM Project supported:

- + Organized 9 technical training classes for members of the village FPTs;
- + Provided tools for forest patrolling such as protective uniforms, shoes, matchets, flashes, and raincoats.
- + Provided templates/forms for recording.

Table 6. Training and provision of tools for FPT members

No.	Activities	Unit	Plan	Actual	%
1	Training for members of the village FPTs	person	265	261	98.5
2	Tools for forest patrolling	set	265	265	100



Image 10. Technical training for the village FPT members



Image 11. Provision of tools for forest patrolling teams

2.4. Monitoring

Along with the establishment/re-establishment, improvement of the regulations and the training for the members of the village FPTs, monitoring of the implementation process is very important.

Table 7: Monitoring indicator of the FPTs in 21 villages

No.	Indicator	Unit	Quantity
1	Protected forest area	ha	2,149
-	<i>PFES area (as result of 2016)</i>	<i>ha</i>	<i>1201.69</i>
-	<i>Planted forest area in 2017 (under support of the SNRM Project)</i>	<i>ha</i>	<i>74.55</i>
2	Forest patrolling plan	village	21
3	Forest patrolling record	notebook	21
4	Satellite maps that show forest patrolling routes	Village	21
5	Forest patrolling frequency	Time/month	4
6	Allowances for FPT members from VF	VND/month/person	Discussed (depends on VF availability)
7	Detected and handled violations	case	46
8	Number of commune people who committed violations	person	46
9	Reported results of violation handling	case	46
10	Percentage of villagers who know about existence of the FPTs	%	100
11	Evaluation of forest protection after establishment of FPTs		
-	<i>Better than before</i>	<i>%</i>	<i>100</i>
-	<i>Remains unchanged</i>	<i>%</i>	<i>0</i>
-	<i>Worse</i>	<i>%</i>	<i>0</i>
12	Local people understand about the regulations of forest protection and management	%	100

2.5. Encountered problems

- Funds for forest patrolling in each village were very limited, mainly relies on PES funding, so allowances for the members of the village FPTs were very different among villages.

- It was difficult to access forests in the locality; Boundaries of forests/forestry land and forest owners were not clear;
- The awareness of villagers on forest protection and development was not very good;
- Collaboration and coordination among stakeholders (i.e., FPTs, VMBFMLD, CPC, and local forest rangers ...) were not very effective nor in timely manner;
- Violators were not willing to remedy for violations to forest protection and development regulations that caused difficulties in violation handling process by FPT members.

2.6. Solutions

- The village funds should be used for forest patrolling work as a priority. Contribution of the villagers and PFES to the VF should be use for this purpose as mainly;
- Members of the forest patrolling teams should be key persons of the village who have knowledge and being respected by the villagers;
- Application of various forms of communication/dissemination (i.e., through radio, face to face meeting with people ...) to raise people's awareness on forest protection;
- Discuss about results of forest patrolling during village meetings to review and evaluate the implemented activities, plan for the coming time.

2.7. Lesson-learned

- Promotion of democracy and autonomy of the local people has helped gaining their consensus in forest protection;
- Awareness raising for the local people is very important as their lives are attached with the forests;
- Fund for forest patrolling should be paid with attention and allocation since this motivates members of the FPTs to work;
- Engagement of authorities at different levels and multi-sector, which core roles belong to CPC and District FPD.

3. Af/reforestation, scattered tree planting

3.1. General introduction

Forestry land in Pa Khoang commune occupies for 3,975.6 ha, of which:

Production forests:	1,534.39 ha
Forests:	553.80 ha
Forestry land without forest cover:	980.59 ha

<i>Special use forests:</i>	<i>2,441.21 ha</i>
Forests:	1,595.90 ha
Forestry land without forest cover	845.31 ha

Forestry land without forest cover occupies for 45.9%, thus, support for af/reforestation is the number one priority task of the project. Through the village meetings, the project has supported the local people to develop a 5-year plans (2016-2020) for 21 villages that approved by the CPC. The project will support af/reforestation by the local villager for two years from 2017 to 2018.

Since land areas of the local HHs are small, some of them are less than 0.5 ha and located far from each other. These areas are not enough to be eligible to be a forest plot, but in these areas the households are no longer cultivating agriculture crops, thus, the Project has conducted survey and decided to supply tree seedlings for them to do scattered tree planting. The selected tree species are high economic and multi-purpose values, which not only contribute to increase forest cover but also can bring benefits to the local HHs as NTFPs.

According to the project plan, in 2017, the project invited the consultant to conduct a field survey to select sites to for af/reforestation. Through the field surveys, discussion with villagers; analysis of natural condition, socio-economic factors, provincial planning Son La and other lesson-learned of the province, 115.15 ha have been proposed for af/reforestation. Pursuant to the Law on Forest Protection and Development in 2004, other documents issued by the Government, the MARD and Dien Bien PPC, the Project has developed a “design document on af/reforestation in Pa Khoang commune, Dien Bien district” and submitted to competent authorities for approval.

3.2. Theory basis and lesson-learned from other areas

a) Theory basis

Theory basis to implement af/reforestation activities of the project:

- Pursuant to the Law on Forest Protection and Development in 2004 of the Government;
- Pursuant to the Decree No. 23/2006 / ND-CP dated March 3, 2006 of the Government, on enforcement of the Law on Forest Protection and Development;
- Decision No. 76/QĐ-UBND dated January 14, 2008 of Dien Bien PPC approving the report on forest reviewing and planning by three forest categories for 2006-2020 period; Decision No. 714/QĐ-UBND dated 16 September 2013 of Dien Bien PPC approving the conversion of forest under three forest categories in Dien Bien province;
- Decision No. 1549 / QĐ-UBND dated December 16, 2016 of Dien Bien PPC promulgating list of forest tree species that encourage to be planted as in accordance with incentive policies for af/reforestation; assigning

and approving design document and budget estimation for development of production forests, NTFPs, and protection forests in Dien Bien province;

- Guideline No. 2463/HD-SNN dated 29th December 2016 of the DARD on standards of forest tree species and regulations on production management and use of forest tree seedlings for afforestation and development of non-timber forest products in Dien Bien province. Guideline No. 2463 / HD-SNN dated 29/12/2016 of the DARD on standards of forest tree species and regulations on management of production and use of forest tree species for afforestation and development of non-timber forest products in Dien Bien province.

b) Lesson-learned from other areas

Several projects that have been successfully implemented in recent years in Vietnam.

The Project of Forest for Livelihood Improvement in the Central Highlands (FLITCH) that was implemented in 97 communes in 22 districts of Kon Tum, Gia Lai, Dak Lak, Dak Nong, Lam Dong and Phu Yen Province. The project is financed by loans from the Asian Development Bank (ADB), and non-refundable funds from the Trust Fund for Forests (TFF) (Netherlands, Finland, Sweden and Sweden). The projects carried out from 2008 to 2016 with 4 components: (1) sustainable forest resource management and development, (2) livelihood improvement, (3) capacity building, and (4) project management. The Project developed technical guidelines, investment in new afforestation, agroforestry plantation, restoration of gardens and support for forest protection and management, establishment of commune development funds, issuance of land use right certificates. Specific investments are as follows: provided an incentive of 500USD/ha for afforestation by households and by the time of harvesting those who were supported shall return to the commune development fund USD150/ha; 400USD/ha for afforestation by organizations and they shall return USD 250/ha by the time of harvesting; support for agroforestry model was USD300/ha, support for improvement of gardens was USD 100-200/household. As a result, afforestation by HHs reached 140.06 ha, 7,716 ha of agroforestry models, 2,175 ha of renovated garden; 1,171 ha of protection forest and 7,800 ha of afforestation by forest organizations/enterprises. The project has contributed to reducing the rate of poor households, narrowing the income gap between the poor and medium households in areas where the poor have to live dependently on the forests of the 6 project provinces, where special attention is paid to ethnic minorities; building capacity to manage and use forests and forestry land in the project area, especially capacity and skills of communities and households; sustainable forest management and biodiversity conservation with the participation of the communities, public and private sectors; develop high productivity production, protection and special-use forests and other silvicultural activities in order to increase the supply of wood and forest products to increase people's incomes and contribute

to the protection of the environment and biodiversity conservation; address essential needs of infrastructure for socio-economic development of the project areas such as roads, water supply, medical stations, schools, small irrigation works and community cultural houses; improve livelihoods of forest-dependent people in the selected communes of the 6 project provinces.

- The Forestry Development Project (KfW7) is an ODA project funded by the Government of Germany through the German Development Bank. The project was implemented in two provinces of Hoa Binh and Son La from 2006 to 2016. One of the objectives of the project is to afforest, regenerate and manage 20,356 ha of forest area, of which, 16,756 ha in the project targeted communes, 3,600 ha in the core zone of the nature reserve. By participating in the project, households and village communities were supported for costs of forest planting, tending and protecting through bank accounts opened at district branch Agribank. The project created jobs, increased income for a part of the people in the project area, contributed to the poverty reduction, achieve objectives of the National Target Program on building new rural area of the provinces and development of the local area project. One of the successes of the project is the community-based forest protection and development, linking forest development with community economic growth.

- The World Bank-funded Forestry Sector Development Project (WB3) was implemented in six provinces in the North Central Region (Thanh Hoa, Nghe An, TT Hue, Quang Nam, Quang Ngai and Binh Dinh Province) from 2005 to 2015. This was the first ODA project to support local people in production forest development with preferential credit loans. Households participating in the project shall be allocated with forestry land and land-use right certificate, training for capacity building and free of charge forestry extension services. The Project has helped to develop over 70,300 ha of commercial production forests. FSC forest group certification is granted to nearly 800 ha of households. Total outstanding loans reached over 500 billion VND with more than 18,000 households have outstanding debts. The project has brought significant socio-economic and environmental benefits, contributing to the improve production capacity and living standards for farmers, and to sustainably reduce poverty. Thousands of hectares have been covered with green that help to prevent soil erosion, regulate water resource, improve ecological environment, conserve biodiversity, and to contribute to climate change response in the recent years.

3.3. Carried-out activities

a) Planning for forest and scattered tree planting

The Project has assisted to organize 3 village meetings in each village:

- The first village meeting: Introduction of the SNRM Project to the local people and registration of the villagers to participate in the Project.
- The second village meeting: Find out the local villagers' needs for each activity and develop 5-year plans.
- The third village meeting: Election of members of the VMBFMLD;

introduction of the 5-year action plan and development of annual action plan.

As a result, people in 16 villages have registered to participate in af/reforestation (both SUF and production forests); people in 21 villages have registered to participate in scattered tree planting.

b) Review potential land area for af/reforestation

Using results of village meetings, the Forest Management Officer of the Project has reviewed potential forestry land for af/reforestation before asking consultant to conduct field survey and design.



Image 12. Village meeting on af/reforestation and registration for participation

- + Step 1: Collection of related information,
- + Step 2: Desk review for potential forestry land for af/reforestation (DT1);
- + Step 3: Using tablet and GPS for field surveys and design (people's needs, actual land)

c) Consultant recruitment for field survey and design for af/reforestation

- + Step 1: Collection of related information;
- + Step 2: Field survey;
- + Step 3: Office work and development of af/reforestation design document;
- + Step 4: Submit to competent authority (Dien Bien DARD) for appraisal and approval for both presentation and maps.

As a result, on June 12, 2017, Dien Bien DARD issued a report on af/reforestation design document for 115.15 ha, of which:

- SUF land was 16.81ha;
- Production forest land was 98.34 ha.



Image 13. Villagers participating in af/reforestation designing process

d) Technical training on scattered tree planting

From April 13-18, 2017, the project has organized 8 technical training courses on forest tree planting plantation for participated villagers with the aim of providing them with knowledge and techniques on af/reforestation.

Within 3 days, from April 7-9, 2017, the Project organized 21 training classes with 838 participants in 21 villages with the aim of providing basic knowledge and requirements on forest tree protection.



Image 14. Training on scattered tree planting

Table 8: Technical training on forest tree planting

No.	Village	Venue	Participants
1	Ha 1 and Ha 2 village	Ha 2 village	32
2	Dong Met 1 and 2 village	Dong Met 1 village	33
3	Ten and Cong village	Ten village	35
4	Vang 1 village	Vang 1 village	33
5	Bo and Co Cuom village	Bo village	11
6	Xom 1,2,3 and Co Thon village	Xom 1 village	21
7	Vang 2 and Pa Tra village	Vang 2 village	19
8	Nghiu1 and Nghiu2 village	Nghiu2 village	21

d) Implementation of aff/reforestation and scattered tree planting

From June 15 to July 30, 2017, the Project provided tree seedlings to the local participated HHs and supervised their implementation in 21 villages.

Table 9. Quantity of tree seedlings

No.	Village	Tree species				
		Total	Michelia mediocris Dandy	Pinus	Syzygium nervosum	Canarium
		86,122	29,526	34,758	20,084	1,754
1	Vang 2 village	1,577	526	1,051	0	0
2	Pa Tra village	3,658	1,904	0	0	1,754
3	Dong Met 1 village	666	222	0	444	0
4	Dong Met 2 village	12,332	4,111	5,698	2,523	0
5	Co Thon village	2,620	873	0	1,746	0
6	Ten village	9,202	3,067	6,135	0	0
7	Cong village	5,805	1,939	3,866	0	0
8	Ha 1 village	5,135	1,705	100	3,330	0
9	Ha 2 village	7,526	2,509	881	4,136	0
10	Bo village	6,644	2,351	2021	2,272	0
11	Co Cuom village	733	244	0	488	0
12	Vang 1 village	20,080	6,693	13,387	0	0
13	Xom 1 village	0	0	0	0	0
14	Xom 2 village	3,929	1,310	0	2,620	0
15	Xom 3 village	844	281	0	562	0
16	Nghiu1 village	2,431	810	1,621	0	0

No.	Village	Tree species				
		Total	Michelia mediocris Dandy	Pinus	Syzygium nervosum	Canarium
		86,122	29,526	34,758	20,084	1,754
17	Nghiu2 village	2,943	981	0	1,962	0

Table 10. Quantity of scattered tree seedlings provided to the participated HHs

No.	Village	HHs	Tree species				
			Total	Michelia mediocris Dandy	Grafted Canari um	Dracontomelo n	Chukrasi a tabularis
Total		814	15,565	5,199	7,892	981	1.493
1	Vang 2 village	35	860	385	475		
2	Pa Tra village	18	360		360		
3	Dong Met 1 village	55	976	320	336	320	
4	Dong Met 2 village	67	1,186	493	693		
5	Co Thon village	41	454	120	237	97	
6	Ten village	39	1,153	390	373		390
7	Cong village	29	560	140	140	140	140
8	Keo village	50	650	250	150		250
9	Pu Sung village	62	1,740	600	600	270	270
10	Vang 1 village	29	580		580		
11	Xom 1 village	47	572	278	294		
12	Xom 2 village	32	494	90	404		
13	Xom 3 village	42	570	182	388		
14	Nghiu1 village	60	1,200	600	600		
15	Nghiu2 village	45	900	450	450		
16	Sang village	26	660	330	330		
17	Ha 1 village	23	465		235		230
18	Ha 2 village	35	743	310	243	110	80
19	Co Muong village	20	400	200	200		
20	Bo village	32	490		490		
21	Co Cuom village	27	552	61	314	44	133

Designed and approved land area for af/reforestation in 2017 was 115.15ha and planted area in 2017 was 74.55ha.



Image 15. Provision of tree seedlings

3.4. Supervision for implementation process

Along with the implementation of the forest tree planting, supervision of the implementation process plays a very important role, too. Some of specific indicators are as following:

a) Survival rate

In October 2017, the Project worked with Pa Khoang CPC to check survival rate of planted trees, and the results are as follows:

- **Af/reforestation:**

Survival rate of *Michelia mediocris* Dandy was over 90%, 95% for *Canarium*, 85% for *Chukrasia tabularis*, and 60% for *pinus*. The cause of low survival rate of *pinus* was that the planted tree destroyed by cattle.

- **Scattered tree planting**

Survival rate of *Chukrasia tabularis* was 91%, 86% for *Michelia mediocris* Dandy, 84% for *Dracontomelon*, and 67% for *canarium*.

Canarium recorded with lowest survival rate (67%) due to improper technique application by the local people.

b) Growth of planted trees

Checking results collected in October 2017 reflect that the planted trees are growing well, after three months of plantings most of trees have got 1-2 new leaves.



Image 16. Survival rate checking after 3 months of planting (October 2017)

3.5. Encountered problems

- Free grazing affected to the survival rate of the planted trees;
- All villages have regulations on forest protection and development but enforcement is not very good;
- Natural, socio-economic conditions of the project areas remain difficult; 51% of HHs in the commune are poor, their land has been used for agriculture production

as mainly but not afforestation;

- The boundaries of forests and forestry land as well as unclear ownership issue are causing difficulties in the management and implementation of the work.
- Information on planning and land use right have not yet been fully updated;
- Many HHs did not follow Project trained technique. The related stakeholders did not fully participate in implementation of the project work;
- Project activities have not been integrated with other projects.

3.6. Proposed solutions

- Revise and enforce the village forest protection and management regulations; raising the sense of responsibility of every individual in forest management and protection.
- Evaluate, develop as assessment reports and share lesson-learned;
- Promote integration of project activities with other projects;
- Promote engagement of other related stakeholders in supporting project implementation;
- Utilize village fund from PFES for forest protection and development;
- Reward outstanding performance holders in a timely manner to encourage them to better participate in project implementation.

3.7. Lesson-learned

- Promotion of democracy and autonomy of the local people has helped to gain their consensus in forest protection. Application of community-based approach for planning, implementation, monitoring, and evaluation;
- Awareness raising for the local people is very important as their lives are attached with the forests;
- Integrate project components with other projects;
- Maximize all resources for Project implementation, especially, involvement of the local authority and other related sectors;
- Resources and risks should be taken into account while planning.

4. Identification of village boundaries

4.1. General introduction

Pa Khoang is a newly divided commune with a total of 21 villages located around Pa Khoang Lake. Although it has been separated, many villages share long traditions, customs and large area of forests, and cultivation fields.

According to the forest plan by three categories of the Government, there are two main types of forest in Pa Khoang commune which are SUF occurs on 2441.21 ha, accounting for 61.4% of the planned forestry land, and production forests. It is stipulated that the SUF is allocated to Muong Phang Forest Management Board. Therefore, the identification of boundaries of the villages and forests must be done to

facilitate forest protection.

4.2. Theory basis and lesson-learned from other areas

The SUSFORM-NOW Project, funded by JICA, was implemented from August 2010 to August 2015 with the aim of promoting participatory forest management and livelihood development through PRAP implementation. In 2014, the Project supported Dien Bien to develop PRAP for 2013-2020 period targeting two communes as of Muong Phang and Muong Muon commune. In Muong Phuong commune, the Project supported to identify boundaries of 26 villages and forests (9 separate villages and 6 village groups as the groups together manage the same forests).

4.3. Carried-out activities

Identification of village and forest boundaries have been done with 4 steps:

Step 1: Collection of related information (decisions, maps in all type, results of village meetings, village regulations on forest protection); Development of draft map based on collected information.

Step 2: Organization of village consultant workshop with participation of representatives of villages and professional units on agreement on implementation methods, content of field survey, participants of boundary demarcation, and development of detail plan for field survey.

Step 3: Organization of village meetings to agree on boundaries on maps and routes. Representatives of villages go to the sites to identify boundaries. Make minutes of the identified boundaries between villages with the witness of communal and district professional agencies, CPC endorsement is needed for the minutes.

Step 4: Collection of field survey records, building village boundary maps, and organizing meetings to agree on the village boundaries to complete maps. Publish the identified village boundaries, print maps for villages, and provide landmarks for installation at sites.

From December 05-11, 2017, the Project assisted to identify boundaries for all villages and village groups with 20 routes.

According to administrative management of Pa Khoang commune, there are 21 villages and 11 of them belong to 5 village groups, which are Group 1 consisted of Xom 1, Xom 2, and Xom 3 village; Group 2 consisted of Nghiu 1 and Nghiu 2 village; Group 3 consisted of Ten, Cong, and Keo village; Group 4 consisted of Dong Met 1, Dong Met 2, Co Thon village; Group 5 consisted of Ha 1, Ha 2 village. These five groups manage and use the same area of lands so there was no boundary demarcation applicable to these groups.



Image 17. Boundary demarcation at sites



Image 18. Villagers agree on satellite map boundaries

BẢN ĐỒ RANH GIỚI CÁC BẢN XÃ PÁ KHOANG

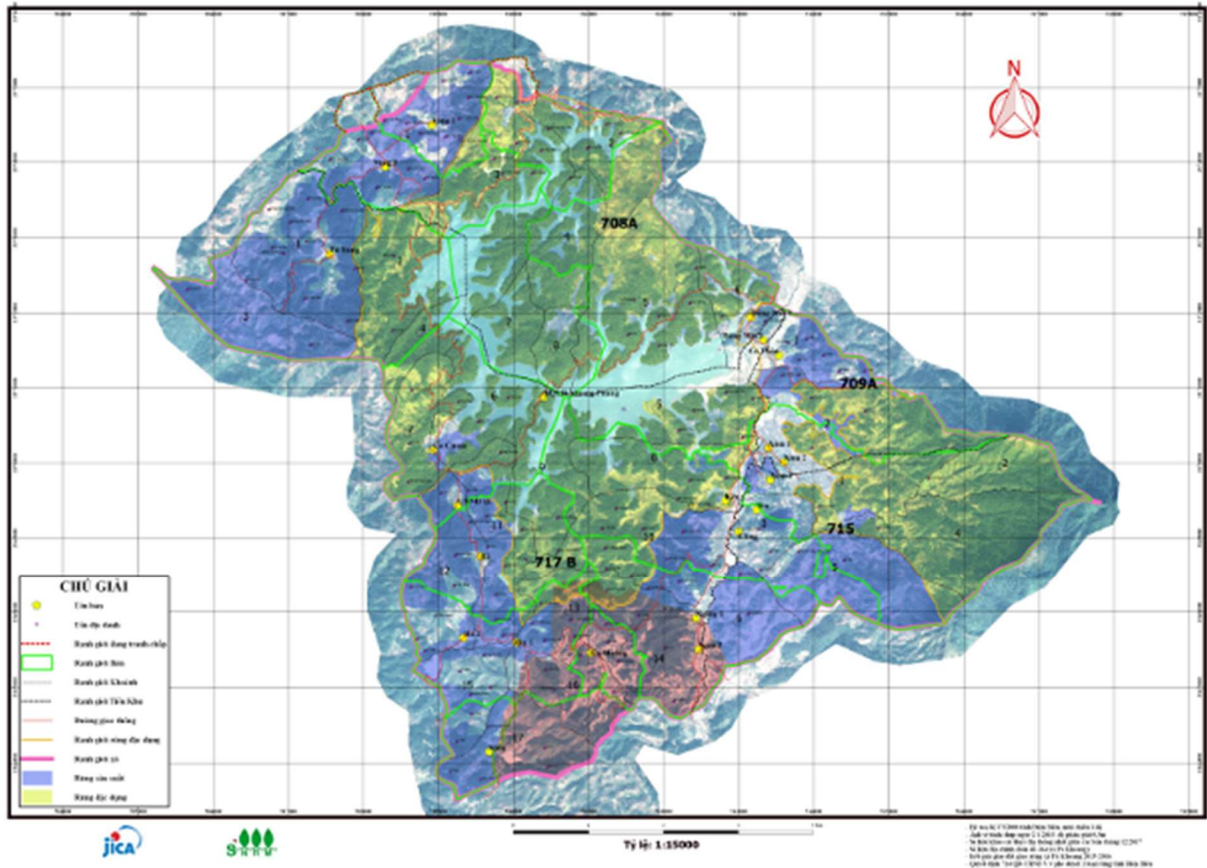


Table 11. Village and village groups in Pa Khoang commune

No.	Village	HHs	Ethnic	Note
1	Vang 1 Village	42	Kho Mu	
2	Vang 2 Village	52	Kho Mu	
3	Pu Sung Village	71	Kho Mu	
4	Pa Tra Village	19	Thai	
5	Co Cuom Village	56	Kho Mu	
6	Bo Village	34	Thai	
7	Ha 1 Village	23	Thai	No boundary demarcation
8	Ha 2 Village	32	Thai	
9	Co Muong Village	27	Kho Mu	
10	Sang Village	28	Thai	
11	Xom 1 Village	54	Thai	No boundary demarcation
12	Xom 2 Village	66	Thai	
13	Xom 3 Village	59	Thai	
14	Nghiu1 Village	58	Thai	No boundary demarcation
15	Nghiu2 Village	43	Thai	
16	Ten Village	38	Kho Mu	No boundary demarcation
17	Cong Village	30	Kho Mu	
18	Keo Village	47	Kho Mu	
19	Dong Met 1 Village	78	Thai	No boundary demarcation
20	Dong Met 2 Village	66	Thai	
21	Co Thon Village	40	Thai	

4.4. Encountered problems

There are no specific regulations on administrative boundaries of the villages in the legal documents. However, in the real life, the local people have family relationship, boundaries are divided from long time ago (previous generations), especially, to areas where lived by different ethnic groups.

Each ethnic group has a different habit of living and farming so impacts on forests from their livelihood activities are different. The documentation of village boundaries is important as it helps managers to identify appropriate approach and support for villagers.

During the identification of village boundaries, there are many points that indicate the incompatibility of commune administrative boundaries on paper and the fact (parts of area of Vang, Pa Tra and Bo village are not included in commune

boundary). Land-use right certificates were granted by mistake to other communities (land of cemetery of Nghiu village was on forest land use right certificate of Cong village).

There is a conflict in production that related to land boundaries of the villages, which may cause negative impacts on forest protection and development if it is not resolved in a timely manner.

FPTs found difficult in forest patrolling because they did not know exact boundaries.

4.5. Solutions

There is a need for specialized agencies to assist in completing boundary demarcation where conflicts happened. There should also be measures to revise and re-allocate forest areas as agreed among villages (sacred and holy forest) to avoid conflicts, especially, to PFES forests.

Communities should clearly identify village boundaries and specialized units should support the development of village regulations on forest management to raise their sense of responsibilities in forest protection. This is very important in ensuring the sustainability of forest management and protection.

4.6. Lesson-learned

Demarcation of village boundaries is not for a legally binding but it is important basis for the community to have common agreement on forest management and production. In some areas where lands have been allocated to communities or households, boundary demarcation does not make much sense. In Pang Khoang Commune, most of agriculture production land and part of special-use forest land has not been allocated, thus, the support to villagers to demarcate boundaries between villages is an important basis for forests and forestry land allocation in the future.

Handling boundary disputes is only effective if the local people and professional agencies/authorities engage in.

5. Revision of village regulations on forest management and protection.

5.1. General introduction

In 2013, when it was Muong Phang commune, the villages have developed their own regulations on forest protection and development, which approved by Dien Bien DPC as in accordance with the Decision No. 1814/QĐ-UBND dated May 3, 2015.

Over the past four years, the enforcement of forest protection and development regulations has shown that to some villages, where villagers enforced well the regulations, in the places where the regulations on illegal hunting, smuggling, exploitation of forest products, and forest fires have decreased. The village regulations on forest protection have helped enhancing awareness, responsibility and self-consciousness of each villager in the community, bringing into play the positive

character of customs and traditional cultural values in each community as well as maximizing available resources in the local area for protection and development of forests.

5.2. Theory basis and lesson-learned from other areas

Circular No. 70/2007/TT-BNN dated August 1, 2017 of the MARD guiding the formulation and enforcement of the convention on forest protection and development in the community.

Decision No. 11/2015/QĐ-UBND dated July 27, 2015 of Dien Bien PPC promulgating template of regulations for village and village teams in Dien Bien province.

Decision No. 1814/QĐ-UBND dated May 3, 2013 of the Chairman of Dien Bien DPC approving the Forest Protection and Development Regulations of 47 villages of Muong Phang commune, Dien Bien district.

Pursuant to Official Letter No. 428/KH-KL dated June 5, 2017 of Dien Bien Sub-SPD on the plan of reviewing and evaluating forest protection and development regulations in 21 villages of Pa Khoang commune, Dien Bien district;

5.3. Carried-out activities

Steps of revision of village regulations on forest management and protection as in accordance with the Circular No. 70/2007-TT-BNN:

Step 1: Collection of documents and related information. On July 18, 2007, the project office coordinated with Pa Khoang CPC to hold a commune-level meeting with the following objectives:

- Assessment of the content of the 2013 regulations. Identification of strengths, weaknesses, inappropriate provisions of the regulations (boundaries of villages with changes, changes in forest areas, and paid PES, etc.)
- Collect comments/feedbacks from representatives of villages and professional units (SPDs, district justice departments, etc.) on the need of revision.
- Formulate the plan, content and method of revision.

Step 2: Drafting and finalizing the revision of the regulations.

- The project, together with the support of forest rangers and commune judicial cadres, has supported to organize 3 village meetings in each village to draft and finalize of the regulations for 21 villages.
- As a result, 100% of people in the villages agree with the contents of the new village regulations and it was submitted to CPC for compiling and submitting to DPC for approval.

Step 3: Approval to the village regulations:

- In all the villages, the village meeting minutes will only be submitted to CPC after the revised content has been agreed by all villagers. The CPC then represents each village to make request and submits to DPC asking for

approval to village regulation on forest protection and development. The district justice department shall coordinate with the district FPD to appraise the village regulations and advise the Chairman of the DPC for approval.

- In April 2018, the DPC will approve the forest protection and development regulations of 21 villages in Pa Khoang commune.

Step 4: Implementation arrangement

- Dissemination of the village regulations will be implemented through a village meeting.
- Supervision to the regulation enforcement.



Image 19. Meeting on revision of the village regulation on forest protection and development

5.4. Monitoring to village regulation enforcement

The village heads and the heads of VMBs are responsible for handling violations to the regulations and reporting to CPC on status of regulation enforcement.

The monitoring is applicable for forest harvesting (right place, area, volume, and techniques), forest protection and management (prevention of deforestation, forest fire and fighting, shifting cultivation and prevention of pests and diseases to forest trees.)

Monitoring is also applicable for funds collection and payment that related to violation fines and PFES.

At the end of the year, the village heads shall organize meetings to together with villagers to evaluate the enforcement of the regulations, make the revenues and expenditures publicized.

5.5. Encountered problems

This regulation regulates norms of behavior of HHs and individuals in forest protection and development.

The 2013 approved regulation has very specific provisions on compensation but it has not been enforced in real.

Illegal deforestation and forest logging have happened but it was not warned properly. The 2013 regulation was printed and delivered to each HH, but very few of them still keep it.

5.6. Solutions

Outreach communication to raise awareness of the community about the roles and importance of forest protection and development.

Create fixed bulletin boards at the village entry gates so that everyone can grasp the major contents of the village regulations.

Raise the sense of responsibility of the village heads and the VMBs for reminding villagers to strictly follow the regulations, handle and fight against violations.

5.7. Lesson-learned

Promotion of democracy and autonomy of the local people has helped to gain their consensus in forest protection;

The forest protection and development regulation for village level must be formulated by the local community and be based on their needs. Supporting local communities to revise their regulations is considered as a chance for the competent authorities to raise awareness of local people in forest protection and development.

Communities of ethnic minorities in remote communes have limited access to information, so the content of the new regulations should be provided well by the specialized staffs such as justice officers, and forest rangers to make sure the regulation is enforced.

6. Support for beekeeping

6.1. Introduction

Beekeeping and harvesting of honey from natural forests are activities that bring significant income to the local people in Pa Khoang commune. Although beekeeping has been around for a long time, people are still adopting traditional farming practices (using old beehives), honey yields are low with an average of one to two harvesting time per year, 4-5kg of honey and wax per beehive. In addition, the local people extracted honey by cutting the whole bar (honey and wax) that makes the next period of harvesting longer as bees need to build the honeycomb again. Moreover, after each harvest, all bee eggs, larvae and bee pupae were removed, leading to the destruction of honey bee structure and bees abscond (during September and October) when source of honey and pollen is limited. Therefore, this is considered as unsustainable beekeeping.

The conversion of traditional beekeeping to modern way (using standardized wooden beehive boxes) will facilitate beekeepers manage their bee colonies, prevent diseases, merge/divide bee colonies, replace queen bee, and feed bees. The new model of beekeeping promises to increase number of harvesting times to increase income for the beekeepers.

6.2. Background

Pa Khoang is a mountainous commune of Dien Bien District with natural area of 5,714.7 ha, forest areas are 2,143 ha, and most of them are SUF which is under management of Muong Phang Management Board. The forest of the Pa Khoang Commune plays a very important role in protecting and regulating the water source of Pa Khoang Lake, supplying water for Muong Thanh field and four hydro-power plants. Currently, forests in Pa Khoang managed well with large stock and many kinds of tree species such as *Castanea sativa*, oak, *Vernicia*, and *Schefflera octophylla* ... This is a great source of honey and pollen for beekeeping.

According to the preliminary survey by the project, each beekeeper has between 3 to 4 boxes, very few have from 8 to 10 boxes as it depends on quantity of bees each year. According to some experts in beekeeping in Dien Bien province, the area around the Pa Khoang Lake is a plentiful source of nature bees. Every year from late November to February, the bees find itself the empty boxes placed by the local people as its nests. People do not have to spend to buy bees. This is an advantage to develop beekeeping in the locality.

Selling honey bee product is relatively good as the buyers come to every household to buy. Very few HHs bring the product to the city and sell for higher prices but distance is relatively far. In addition, Pa Khoang commune is where attracts many tourists when they come to Dien Bien province as this commune located in the Muong Phang historical area. This is considered as a favorable condition that build market for honey bee products.

Considering the potential development of beekeeping in Pa Khoang commune, the Project has implemented a number of activity to support the conversion of the traditional bee keeping to sustainable bee keeping models. It helps increasing the income for the local people, contributing to improve the sense of responsibility for sustainable forest protection and development.

6.3. Carried-out work

a. Technical training on beekeeping using modern beehive hives

Bee keeping with modern hives is a model that has been successfully implemented in many localities, but it is still new to the people in Pa Khoang commune, so the project has selected only 03 villages to pilot this activity. In each village, 10 households were selected to participate in this new beekeeping model. The selected beekeepers were the ones who currently have 3 or more hives and registered to participate in this activity.

The project has organized 2 technical training courses on beekeeping for 30 beekeepers from Vang 1, Pa Tra and Dong Met village in January 2017. Facilitator of the training is experienced in beekeeping and currently works in the College of Northern Agriculture and Rural Development.



Image 20. Technical training on beekeeping

The training focused on introduction to the beekeepers about biological characteristics of honey bees; beekeeping techniques in modern boxes; how to use tools for beekeeping; several measures to prevent diseases and bee predators; techniques on harvesting, processing and preserving honey. During the training course, the beekeepers have learned about techniques of stretching the bridge, attaching wax foundation, and moving the bees from the old to the new hives as they had to do it themselves after the training. In addition, the beekeepers also instructed on how to maintain, manage and stabilize the bee colonies after moving to new hives.

At the end of the course, 100% of the participants confirmed that they have mastered the technology of bee keeping and could apply to their own beekeeping model.

b. Provision of beehive boxes

In order to support the beekeepers, the Project has provided each household with 3 bee boxes, each contains 7 frames. The beekeepers, at their own cost, buy steel wire and wax foundation to stretch the frames. Boxes were provided to the HHs before the technical training.

To raise the awareness and sense of responsibility of the beekeepers, the project applied method of "the State and the people working together", where the Project supported them with technical training and 3 hives per HHs and the local HHs buy steel wire and wax foundation. However, only 03 households implemented this after the training in 2017.

A number of main drivers that households did not adopt new beekeeping method are as follows:

The beekeepers are afraid of honey harvested from new bee-keeping model will not be sold easily. The beekeepers used to sell both honey and wax to buyers.

- Beekeeping tools such as steel wire, wax foundation, and head cover, etc., are not available in Dien Bien so they have to travel 20-30 km to buy or to order.

- Some of households thought that the bees will find its way to the new boxes without moving needed.



Image 21. Provision of boxes for beekeeping to the HHs

During the meeting with the PPMU organized in October 2017, based on implementing results and goals of the beekeeping, the Project considered that beekeeping is very potential in Pa Khoang commune, so the Project will continue support the local beekeepers to apply new model. However, the Project needs to focus more on communication and effectiveness of the new model, support more tools for the HHs to do beekeeping, and review the list of the participating beekeepers in 2018. Base on that basis, the Project will organize study-tour for them and recruit a beekeeping expert to support the beekeepers from step of moving bees from old boxes to modern boxes till harvesting.

c. Study tour

As agreed during the meeting in October 2017, the Project organized a study-tour for 15 beekeepers in the commune to models in Dien Bien City from 18 to 19 December 2017. The study-tour got participation of representatives from CPC, commune extension staff and village facilitators.

The Project has visited two experienced HHs in beekeeping, one of them has 70 boxes of Italian bees and the other has 11 boxes of domestic bees which are under process of multiplication. The beekeepers have witnessed the whole process from preparation, extracting honey, filtering and preserving honey, and maintenance of bee colonies after each harvesting period. They also have got chance to exchange experience in bee maintenance and about market for honey products. This is practical experience that helps people changing their awareness on beekeeping.

d. Moving from old to new hives

In January 2018, the project hired a local beekeeping expert to conduct a survey

on bee keeping status of the participating households. As a result, 23 out of 30 HHs agreed to switch 40 out of 51 traditional hives to new hives.

From 26th February to 7th March 2018, together with experts, the project carried out the bee moving from old to new hives for 23 HHs. However, due to extreme cold weather in early February, 7 out of 40 bee colonies or under splitting process so they were not in good conditions for moving. The moving results are shown in Table 11

Table 12: Result of moving bees from old to new hives

No.	Village	Participated HHs	Number of old hives	Number of new hives
1	Vang 1	9	14	8
2	Pa Tra	6	10	6
3	Dong Met 1	8	16	19
Total		23	40	33

During the bee moving process, villagers were instructed on stretching the frames, moving bee wax to new frames, and moving bees and queen bees to new hives. The HHs were also instructed on maintenance the bees after moving.



Image 22. Guiding the beekeeper to install honeycomb to new frame

e. Provision of beekeeping supplies

In 2018, the Project will provide the local beekeepers with supplies for beekeeping such as, tanks for honey extraction, smoke makers, honeycomb cutting blades, and beeswax spur embedder tools. Moreover, they will also be provided with head cover, gloves, 1kg of sugar/hive and steel wire (details are in the Table 13).

Table 13: Provided beekeeping supplies

No.	Village	Provided beekeeping supplies							
		Hives	White sugar	Wax foundation	Head cover	Smoke maker	Honey extraction tank	Beeswax spur embedder tool	Honeycomb cutting blade
Unit		Hive	Kg	Pcs.	Pcs.	Pcs.	Tank	Pcs.	Pcs.
1	Vang 1	30	8	40	9	2	1	2	2
2	Pá Trá	30	6	30	6	2	1	2	2
3	Đông Mết 1	30	19	95	8	2	1	2	2
Total		90	33	165	23	6	3	6	6



Image 23: Provision of beekeeping supplies for the use of beekeepers in the village to village head

6.4. Monitoring and evaluation

Movement stage is very important because after being moved the bees do not start working immediately, so it is necessary to feed them with sugar to avoid the bees abscond. The project staff frequently calls to remind the beekeepers to make sure that they release the queen bees properly as during the movement process queen bees put in the cage to avoid it being dead or fleeing away. Releasing queen bees should be done within 1-2 days after movement.

In order to evaluate development of the bee colonies, the Project has worked with the beekeeping expert to conduct visits to 33 bee colonies after 7 days of movement. The checking result show that bees develop very well, queen bees continue laying eggs, new wax has been built, but there was phenomenon of dividing colonies. The Project staff and beekeeping expert have provided technical assistance to the local beekeepers and advised them to continue monitoring the bees in the new hives.



Image 24. Checking bee wax and bees after moving

Effectiveness of the model: Since the model has just newly implemented at the beginning of 2018 so by the time of reporting, honey has not been harvested yet. There were 2 HHs who have successfully moved bees to new hives and according to their report, they can harvest 4-5 kg of honey and wax (with old harvesting method). According to experience of the expert, with the new keeping model, the beekeepers can harvest 4-6 times/years but not 1-2 times like the traditional method. The Project needs to continue providing technical assistance to the beekeepers and collecting information for model effectiveness assessment.

6.5. Encountered problems and solutions

Bee keeping using modern hives is a new to beekeepers in Pa Khoang commune. It is not easy for them to apply new technique, especially to the ethnic minorities. Therefore, it is necessary to provide them with technical assistance in the form of hands-on for every step such as moving bees to new hives, extracting honey, dividing/merging bee colonies, and queen bee rearing, etc. More study tours should also be organized for them to visit the successful beekeeping models and learn how to approach the market.

Pa Khoang commune is quite far from the supply sources of inputs for beekeeping, so it is difficult to beekeepers to buy materials/supplies. The Project has contacted some beekeepers in Dien Bien Phu City to support to buy materials/supplies if the commune beekeepers have demands.

7. Fish raising

7.1. Introduction

Pa Khoang commune is potential area for development of fish raising with pond area of about 83.5 ha. Livestock (cattle, goat, and pig raising) and aquaculture together contributes 64.5 % to the economic structure of the commune annually (according to social survey data of Pa Khoang commune in 2016).

According to statement of staff of Dien Bien Aquiculture Center, the water source in Pa Khoang commune is relatively clean, less polluted, and the water source

is mainly from the forests with the temperature varies from 22-28⁰C, which is very suitable for fish raising, especially grass carp. Although fish raising has been existing for a long time, farmers only rely on their own experience and that may lead to high/low fish stocking density in a pond. In addition, pond preparation, fish maintenance, and disease prevention have not been implemented well by the farmers due to lack of experience in application of technical measures.

In order to support the local farmers to do better fish raising, the Project has introduced a model of 50% grass carps, 20% of tilapia, 15% of mrigan carp, 10% of bighead carp, and 5% of carp fish with density of 2 fish/m². This method of polyculture can help saving cost of feed as the major feed for grass carp raising is grass; waste of this fish species can be feed of other fish varieties which living in different levels of water in the pond. The polyculture helps to generate incomes for the farmers at different times as each of fish variety has different growth. In addition, this polyculture is good method to prevent diseases.

The Project has received a lot of requests from the local people and Pa Khoang authorities for supporting them with fish raising. However, due to limited funding, the Project only provided the support to members of FPTs to motivate them participate in forest protection and management.

7.2. Carried-out work

a. Technical training for facilitators

As most of the facilitators have no expertise and experience in fish raising, the Project has organized a technical training course on freshwater fish raising for them. The training focused on carrying pond investigation, biological characteristics of major fish species, pond preparation techniques; polyculture of a number of fish species, pond maintenance techniques, and measures to prevent common fish diseases etc. In addition, the training also provided to its participants with different practices such as measuring pond area, applying lime for ponds before fish raising, and choosing healthy fish, etc.



Image 25. Pond preparation and checking fish

The project has interpreted the content of the form for pond investigation for the facilitators. After the training course, the facilitators have conducted investigation to all ponds of the registered households. The investigated results have been sent to the project office for analysis and only households whose ponds meet the criteria set by the project are selected to participate in fish raising. Therefore, only 221 HHs really participated in this activity out of 265 households who had registered.

b. Informing to eligible HHs on unit price and amount that they have to contribute to the VF

Having investigated ponds, the Project have organized a meeting with participation of all registered to inform them if their ponds meet criteria of the Project or not. Other important information has been informed by the Project to the HHs, for example, support policy of the Project, which stipulates that any supported HH have to contribute 50% of the cost of purchasing fingerlings and lime to the VF at the time of receiving. The HHs have been informed about unit prices of fingerlings and lime and amount each HH has to contribute to the VF. At the end of the meeting, 170 out of 221 eligible households have signed on the agreements to contribute to the VF as the proposed by the Project.

Table 14. Unit price for fish fingerlings and lime applicable to calculate amount for VF contribution

Fish	Size (cm)	(%)	Unit price	Cumulative weighted average price	Unit price of lime (Đ/Kg)
Grass fish	12-15cm	50	1,600		
Tilapia	5-7cm	20	1,200		
Cirrhinus Mrigan	8-10cm	15	1,200		
Bighead fish	10-12cm	10	1,400		
Carp fish	5-7cm	5	1,100		
Total		100	6,500	1,415	3,500

c. Technical training on fish raising

The project has organized two technical training courses on fish raising for participating HHs. The first 14 training classes were organized in 21 villages for 170 households from 4-7 April 2017. The first training course focused on pond preparation techniques as mainly. Lecturers also explained about the polyculture technique and biological characteristics of the five main fish species (grass carp, mrigan carp, common carp, bighead carp and tilapia). During the course, details the pond preparation work have been introduced to the participants such as drainage, mudding, applying lime and then fertilizers, getting water in the pond before releasing fish ...

The second training course was held from May 16th to May 19th 2017 for 165

participants (5 HHs decided not to continue). The second training was about fish selection and releasing; feed and feeding techniques; pond management measures; some common diseases, ways of prevention and treatment. During the training, plan of fish provision and preparations for the fish receiving have been shared to the HHs.

d. Provision of lime

After the first training course (pond preparation technique), the Project has provided lime to the participating HHs within 2 days as of April 13 and April 20 2017. 165 HHs were provided with lime (8kg of lime/100m²). Quantity of lime provided to each HH is shown in the below Table 15. The HHs started preparing their ponds right after receiving lime as schedule and guidance of the Project.



Image 26. Provision of lime

Table 15: Quantity of lime provided to each village

No.	Village	HHs	Area of pond (ha)	Quantity of lime (kg)
1	Ha 1	8	7,950	640
2	Ha 2	11	13,100	1,050
3	Dong Met 1	6	12,000	960
4	Dong Met 2	10	15,350	1,220
5	Co Muong	11	11,950	960
6	Xom 1	5	3,050	250
7	Xom 2	11	12,150	970
8	Xom 3	10	8,100	660
9	Nghiu1	6	5,700	460
10	Nghiu2	6	6,200	500
11	Vang 1	4	6,250	510
12	Vang 2	9	18,100	1,450
13	Bo	7	7,350	590

14	Pa Tra	10	22,600	1,800
15	Co Cuom	10	12,400	1,000
16	Ten	11	12,350	990
17	Cong	6	4,100	310
18	Keo	7	7,150	560
19	Pu Sung	7	12,550	1,000
20	Co Thon	2	2,000	160
21	Sang	8	22,300	1,790
Total		165	222,700	17,830

e. Checking pond preparation work

Pond preparation is important process to ensure success of fish raising, so from 29 - 31 May 2017, the facilitators have conducted a check on the pond preparation of the HHs. From the analysis of pond investigation results, there were 161/165 households whose ponds were qualified, the other 4 HHs whose ponds were not qualified have been removed from the list.

f. Preparation of fish for provision

As agreed, the HHs shall contribute 50% of values of fish and lime to the VF by the time of receiving fish. In order to ensure the HHs keep their commitments, the Project has requested the VMB and village heads to collect the co-contribution of the HHs before providing fish. However, not many HHs have contributed except some in Bo, Sang, and Pa Tra village. It is explained that these HHs were in between-crop period, they have no money to contribute. The Project has worked on this and decided to allow the participating HHs to divide their contribution to two times, 50% of the value must be contributed to the VF before receiving fingerlings and the rest must be contributed before October 2017. There were 153 HHs who met the requirement of co-contribution, others who did not meet the requirements have been removed from the list.



Image 27. Measuring and checking fish before provision

The Project has informed to the HHs on the quantity of fingerlings and details of packing, transportation, and provision of fingerlings to ensure the best quality. The Project also shared with Pa Khoang CPC staff and facilitators on the schedule of delivery of fingerlings for better cooperation. Detail schedule with requirements on preparation of transportation means, belts, transporters have been informed to every HH to ensure safe and fast transportation of fingerlings from assembly point to the ponds.

g. Provision of fish

The Project provided fingerlings to HHs in 21 villages from 8th June to 2nd July 2017. As the quantity of fingerlings is large so the Project has to make plan in a detail manner. Representatives of Pa Khoang CPC, village heads, and HHs invited to check the quality and weight of fingerlings. The HHs can reject if the fingerlings do not meet size and quality requirements. The Project staff and representatives of villages stayed overnight at the fingerling supply farm in order to check quantity of fingerlings for each HH during process of weighting and oxygen packing. The fingerlings were provided to the HHs at the assembly point within 3-4 hours since packing time. Results of fingerling provision are shown in the below table 16. The Project has also provided (free of charge) one bottle of Rescus medicine for pond to each HH to apply before releasing fingerlings.



Image 28. Packing and delivering fingerlings

7.3. Monitoring and evaluation

During transportation, tilapia fingerlings recorded dead in Pa Tra, Pu Sung, and Dong Met 2 due to lack of oxygen. Based on the reports of the HHs, the supplier has sufficiently further provided to these HHs on the next day. The supplier has also learned the lesson and reduced quantity of tilapia from 5kg to 3kg in each pack to avoid leaking the packs.



Image 29. Release fingerings and checking

Table 16. Quantity of fingerlings provided to villages

No.	Village	HHs	Area	Quantity of fingerlings	Of which					Rescus medicine for pond
					Grass carp	Tilapia	Mrigal carp	Bighead carp	Common carp	
		1	(2)	3=2*(2)	4=3*50%	5=3*20%	6=3*15%	7=3*10%	8=3*5%	
1	Ha 1	8	7,950	15,900	7,950	3,180	2,385	1,590	795	8
2	Ha 2	11	13,100	26,200	13,100	5,240	3,930	2,620	1,310	11
3	Dong Met 1	6	12,000	24,000	12,000	4,800	3,600	2,400	1,200	6
4	Dong Met 2	10	15,350	30,700	15,350	6,140	4,605	3,070	1,535	10
5	Co Muong	11	11,950	23,900	11,950	4,780	3,585	2,390	1,195	11
6	Xom 1	5	3,050	6,100	3,050	1,220	915	610	305	5
7	Xom 2	11	12,150	24,300	12,150	4,860	3,645	2,430	1,215	11
8	Xom 3	10	8,100	16,200	8,100	3,240	2,430	1,620	810	10
9	Nghiu1	6	5,700	11,400	5,700	2,280	1,710	1,140	570	6
10	Nghiu2	6	6,200	12,400	6,200	2,480	1,860	1,240	620	6
11	Vang 1	4	6,250	12,500	6,250	2,500	1,875	1,250	625	4
12	Vang 2	3	5,200	10,400	5,200	2,080	1,560	1,040	520	3
13	Bo	7	7,350	14,700	7,350	2,940	2,205	1,470	735	7
14	Pa Tra	10	22,600	45,200	22,600	9,040	6,780	4,520	2,260	10
15	Co Cuom	5	5,000	10,000	5,000	2,000	1,500	1,000	500	5
16	Ten	11	12,350	24,700	12,350	4,940	3,705	2,470	1,235	11
17	Cong	6	4,100	8,200	4,100	1,640	1,230	820	410	6
18	Keo	7	7,150	14,300	7,150	2,860	2,145	1,430	715	7
19	Pu Sung	6	10,550	21,100	10,550	4,220	3,165	2,110	1,055	6
20	Co Thon	2	2,000	4,000	2,000	800	600	400	200	2
21	Sang	8	22,300	44,600	22,300	8,920	6,690	4,460	2,230	8
Total		153	200,400	400,800	200,400	80,160	60,120	40,080	20,040	153

The supplier is responsible for substitute dead fingerlings within 30 days after delivery if it is their fault for leaked packs during transportation. However, they shall be no responsibility if the packs damaged due to negligent of the farmers, or if fingerlings died due to natural disasters (i.e., floods), or water pollution.

During August and September 2017, the Project recorded dead fingerlings in ponds of 10 HHs, 6 ponds were found losing dams in Ha 1, Ha 2, Co Cuom, Nghiu 1, Ten, Co Thon, and Dong Met 1 village. The project has worked with the PPMU, Pa Khoang CPC, Dien Bien extension center, and village heads to investigate and identify causes of dead fish. The investigation results showed that the main reason of dead fish was water pollution due to constant rains in July, August, and September. Since the ponds located in between mountains, so when it rained heavily, waste was vanished to the ponds causing water contamination. Dead fish also recorded with other ponds that did not receive support from the Project. The investigation also found out the HHs who received support from the Project have released other fish species together with the fish species provided by the Project and it might bring diseases to project fish.

For the participating HHs, whose fish dead due to being impacted by floods, the villages will meet to discuss and agree on exemption for each household.

Although the project staff cannot conduct visits to all HHs, regular liaison has been maintained between the project and VMBs and CPC to collect information of the fish raising households in order to provide technical advice to them through village heads.

Regarding to the effectiveness of the project fish raising model, as the fish is still being raised but not harvested yet so it is not possible to assess the effectiveness of the model at the current stage.

7.4. Contribution to the Village Fund

Although the households have signed a commitment to fully contribute to the Village Fund, collection of co-contribution was difficult. However, since the time of payment is the time between crops (May and June), when people have not harvested rice and arrow roots. In addition, the amount of contributions was relatively big (up to 8 million/HH depending on the pond area), the households do not have enough money to contribute. In order to facilitate the participation of the farmers, while it was impossible to cancel the contract signed with the fingerling supplier so the Project agreed to allow farmers to break their contribution into two times. Minimum of 50% of the amount shall be contributed before receiving the fish, and the remaining amount shall be collected before 30th October 2017. After this time, any HHs who have not completed their obligation shall not be eligible to receive any further support from the Project.



Image 30. Project staff checking contribution to the VF

The Project has checked 21 VFs in November 2017. Until 30th October 2017, VMBs have collected VND 249.6 million out of 305.5 million, reached 78.8% of the plan. During the brief meeting organized in November, based on contributed ideas/recommendations of the members of the PPMU, the Project has prolonged the time for contribution till December 31, 2017. As a result, the VFs have collected VND 259.2 million out of VND 305.5 million, reached 84.8% as plan. Results of contribution by the fish raising farmers to the VF are shown in the Table 16 as below. The remaining receivable is VND 46.2 million, mainly counted for HHs in Ha 2, Co Muong, Xom 2, and Ngiu 1 village, where suffered from floods. The Project has worked with the VMB to collect the remaining amount and discussed with villagers to agree on exemption for these HHs.

Table 17: Collection of co-contribution from the HHs to VF

No.	Village	HHs	Contributed amount until October 2017	Contributed amount until 30, 2017	Contributed amount until 31 st December 2017	Remaining amount
1	Ha 1	6,184,750 (*)	6,184,625	6,184,750	6,184,750	0
2	Ha 2	20,374,000	10,050,000	10,050,000	10,050,000	10,324,000
3	Dong Met 1	18,660,000	18,639,000	18,639,000	18,639,000	21,000
4	Dong Met 2	23,855,250	23,855,250	23,855,250	23,855,250	0
5	Co Muong	18,589,250	1,495,500	5,455,000	5,455,000	13,134,250
6	Xom 1	4,753,250	2,500,000	2,500,000	2,500,000	2,253,250
7	Xom 2	18,889,750	8,075,000	8,075,000	8,075,000	10,814,750
8	Xom 3	12,616,500	6,020,000	12,613,500	12,613,500	3,000
9	Nghiu1	8,870,500	4,000,000	4,000,000	4,000,000	4,870,500
10	Nghiu2	9,648,000	5,600,000	9,648,000	9,648,000	0
11	Vang 1	9,736,250	8,800,000	8,970,000	8,970,000	766,250
12	Vang 2	8,075,500	7,250,000	8,075,000	8,075,000	500
13	Bo	11,432,750	11,424,000	11,425,000	11,425,000	7,750
14	Pa Tra	35,129,000	35,129,000	35,129,000	35,129,000	0
15	Co Cuom	7,792,500	3,900,000	7,692,500	7,692,500	100,000
16	Ten	19,207,750	19,207,750	19,207,750	19,207,750	0
17	Cong	6,344,000	4,619,250	5,633,250	5,633,250	710,750
18	Keo	11,097,250	5,000,000	9,369,000	9,369,000	1,728,250
19	Pu Sung	16,398,250	14,882,000	14,882,000	14,882,000	1,516,250
20	Co Thon	3,110,000	3,110,000	3,110,000	3,110,000	0
21	Sang	34,687,000	34,687,000	34,687,000	34,687,000	0
Total		305,451,500	240,613,000	259,201,000	259,201,000	46,250,500

Note: * Ha 1 village agreed to reduce 50% of the contributed amount to all the supported HHs

7.5. Encountered problems and solutions

- Apply fish raising techniques.

Apply lime monthly is an important technique to prevent diseases for fish, especially after rains. Although, the participating HHs have been trained, most of them did not follow the guideline. Moreover, some HHs have bought additional fish to release into their ponds which might carry diseases and transfer to the provided fish. Therefore, it is necessary to enhance communication to motivate them to follow the trained techniques. Study-tours should also be organized to raise awareness of the participating HHs on proper technique application.

- Control pond environmental quality.

Most of the ponds of people in Pa Khoang commune located between mountains where water comes in/out regularly, which is favorable condition for grass carp raising. However, this is considered as a disadvantage as it is not easy to control water quality, especially during rainy season (from July to September). During heavy rain, rainfall spill over the pond capacity that lead to broken pond dam. In addition, rainfall with waste, mud, and acid can contaminate pond water, particularly, it can lead to a decrease in water temperature and sudden cold shock to fish.

In order to limit the above-mentioned negative impacts, the farmers should build ditches around the ponds to minimize rainwater directly flow into the ponds. Stopping water supply during rains, and applying lime monthly, especially, after 2-3-day constant heavy raining.

- Fish feeding source

The project has supported the local HHs with polyculture model where grass carp species accounts for major part (50%) in order to utilize available green and diversified food sources (grass, cassava leaves, banana leaves, etc.). However, most of the households only supply about 50% of the required feed, and not very frequent of starchy food to other fish species. Especially, during the dry season (from October to March), green food source is not available very much, so the local farmers should cultivate grass, banana trees in the surrounding area or in the home garden to create a regular source of feed for fish.

8. Support for fruit tree cultivation

8.1. Introduction

Fruit tree cultivation is one of the activities that attracted many households to participate in (869/984). Pa Khoang commune is very potential area for cultivation of a number of fruit tree species such as plum, peach, lime, and pomelo, etc., thanks to the hot and humid climate (heavy rains, and fertile soil), but most fruit tree species are native. Besides, the local people do not have the habit of fertilizing, pruning, and creating canopy for trees. Measures to prevent some common diseases/pets for trees are not available so fruit quality is relatively low.

In order to maximize the participation of households, especially poor households, the project provided 10 fruit trees per household for free. Any HHs wishing to plant more than 10 trees have to contribute 50% of the cost of the fruit trees from the 11th one forward to the Village Fund.

8.2. Carried-out work

a. Technical assistance

The Project has organized 27 technical training courses on fruit tree cultivation for 869 registered households in 21 villages of Pa Khoang Commune before providing them with fruit tree seedlings. The training provided the participants with

knowledge and skills in planting, maintenance and measures to handle some of the main pests and diseases on 6 fruit tree species (i.e., pomelo, mango, crispy persimmon, and hybrid pear). Trainers of the technical training are experienced persons in fruit tree cultivation from Dien Bien Agricultural Extension Center.

Details of the training:

Land preparation (density and hoeing technique).

Planting technique (standards of seedlings, planting season, and planting techniques)

Maintenance technique (watering, fertilizing, pruning, and canopy creation, etc.)

Measures to prevent some of the common pests and diseases found on 6 fruit tree species

The participating HHs practiced digging and planting trees after the theoretical training. In addition, the trainers have also conducted training on pruning techniques, creating a canopy for the fruit trees available in the garden of the HHs.



Image 31. Technical training on fruit tree cultivation

b. Provision of fruit tree seedlings

The Project has consulted with some specialized units of the province such as the District Agricultural Extension Center, extension officers to identify suitable fruit tree species for local conditions based on the proposed fruit tree species of the local HHs. The discussion has helped to identify 8 fruit tree species namely pomelo, mango (Thai and Taiwan species), plum (purple and green species), French peach (velvety or smooth peach), crispy persimmon, hybrid pear and lime.

The Project has received registration of the local HHs based on the list of the 8 fruit tree species, but there was difficulty in finding seedling supply source of smooth French peach species and green plum. Therefore, the HHs requested to choose velvety French peach and purple plum instead. Table 18 below presents quantity of fruit trees provided for each village.

The project has agreed with the seedling supplier to provide additional 2% of seedlings to the HHs at the time of the delivery. Quality of seedlings was guaranteed for 30 days from the date of delivery.

Project's support for fruit tree seedlings



Image 32. Checking seedling quality before delivery



Image 33. Seedlings packed before delivery



Image 34. Provision of seedlings to the HHs



Image 35. Checking planted trees

Table 18. Quantity of fruit tree seedlings provided to villages

No.	Village	HHs	Quantity and species									Total
			Pomelo (Dien species)	Pomelo (green cover species)	Thai mango	Taiwan mango	Purple plum	Velvety peach	Crispy persimmon	Hybrid pear	Lime	
1	Ha 1	22	40	42	0	0	240	85	55	73	126	661
2	Ha 2	34	147	80	17	105	240	91	29	68	179	956
3	Dong Met 1	78	29	87	35	84	178	274	130	2	191	1,010
4	Dong Met 2	71	95	35	23	175	68	158	44	17	167	782
5	Co Muong	26	8	31	2	79	91	32	9	19	23	294
6	Xom 1	45	7	37	127	38	136	133	126	17	204	825
7	Xom 2	40	55	27	141	20	186	184	14	20	118	765
8	Xom 3	55	101	253	115	319	329	406	94	44	467	2,128
9	Nghiu1	59	12	252	73	41	341	418	209	4	153	1,503
10	Nghiu2	44	6	15	14	24	246	316	74	64	80	839
11	Vang 1	33	35	74	27	54	49	106	0	12	45	402
12	Vang 2	47	16	38	19	21	114	168	26	79	49	530
13	Bo	35	80	60	0	42	153	160	47	20	145	707
14	Pa Tra	18	50	10	0	50	20	30	0	0	20	180
15	Co Cuom	26	16	48	71	36	35	401	0	124	69	800
16	Ten	38	59	33	36	53	191	139	17	22	78	628
17	Cong	30	14	36	63	2	78	53	8	6	30	290
18	Keo	51	23	57	70	42	126	126	11	25	55	535
19	Pu Sung	49	59	82	27	92	132	146	0	84	100	722
20	Co Thon	41	50	9	22	64	191	278	0	0	91	705
21	Sang	27	10	120	15	110	510	75	190	5	10	1,045
Total		869	912	1,426	897	1,451	3,654	3,779	1,083	705	2,400	16,307

8.3. Monitoring and evaluation

After one month of tree delivery, the project office has worked with the PPMU, CPC staff and facilitators to evaluate the survival rate of planted fruit trees in 21 villages. The results showed that the planted trees are growing very well with survival rate reached 91 - 97%. However, protection and maintenance of fruit trees have not been paid much attention. Many households did not make fences to protect trees nor weeding that prevent trees' growing.

Similar to fish raising activity, it is difficult to collect money from the local HHs to the VF because the time of collection was in between crops and people could not contribute as committed, so the project has prolonged the contribution duration. Until December 31, 2017, the VMB has collected VND 107.6 out of VND 133.9 million, reaching 80.4%. The remaining amount will be collected by the VMB. Any HHs who do not contribute to the VF will not be participating in other project activities. The results of the contribution to the VF Fund are presented in Table 19.

Table 19. Contribution to the VF from fruit tree cultivation support

No.	Village	Contribution as plan	Contributed amount until 30 th October 2017	Contributed amount until 31 st December 2017	Remaining amount
1	Ha 1	7,717,500	5,967,000	7,279,500	438,000
2	Ha 2	10,780,000	3,437,500	4,749,500	6,030,500
3	Dong Met 1	4,025,000	4,025,000	4,025,000	0
4	Dong Met 2	1,260,000	1,260,000	1,260,000	0
5	Co Muong	595,000	210,000	210,000	385,000
6	Xom 1	6,562,500	5,957,500	5,957,500	605,000
7	Xom 2	6,685,000	2,574,000	2,574,000	4,111,000
8	Xom 3	27,667,500	25,840,000	25,840,000	1,827,500
9	Nghiu1	15,977,500	7,143,000	7,143,000	8,834,500
10	Nghiu2	6,982,500	4,913,250	4,913,250	2,069,250
11	Vang 1	1,260,000	750,000	750,000	510,000
12	Vang 2	1,137,500	1,076,500	1,137,500	0
13	Bo	6,247,500	5,588,000	5,588,000	659,500
14	Pa Tra	0	0	0	0
15	Co Cuom	9,450,000	8,185,000	9,450,000	0
16	Ten	4,340,000	4,340,000	4,340,000	0
17	Cong	0	0	0	0
18	Keo	437,500	396,000	396,000	41,500
19	Pu Sung	4,060,000	3,331,000	3,331,000	729,000
20	Co Thon	5,162,500	5,160,000	5,160,000	2,500

No.	Village	Contribution as plan	Contributed amount until 30 th October 2017	Contributed amount until 31 st December 2017	Remaining amount
21	Sang	13,562,500	13,562,500	13,562,500	0
Total		133,910,000	103,716,250	107,666,750	26,243,250

Fruit tree planting activity newly implemented in July 2017, while it takes at least 3 years for the trees to fruit, so it is too early to evaluate the effectiveness of the activity.

8.4. Encountered problems and solutions

Compliance with technical procedures: Although all participating HHs are trained before planting, but many of them did not follow the trained techniques. For example, hole size and density, planting techniques were not followed the guidelines that led to dead trees after rains. It is explained that people who attended the training and who dug holes and planted trees were not the same ones. In addition, the local HHs were not fully aware of the importance of technical measures for tree planting. Although the project has assigned facilitators in each village to provide technical support to the participating HHs after planting but due to the high number of participants while each facilitator was in charge of 3 to 4 villages, thus, they could not fully support all of the participating HHs.

Some of the HHs did not really care about tree protection after planning, for example, they did not make fences to prevent tree being destroyed by cattle, or weeding, or fertilization was not paid attention. It is necessary to not only raise awareness of the local people, but also plan separate grazing pastures areas for each village. Any violations should be handled by following village regulation.

9. Support for vegetable cultivation

9.1. Introduction

Pa Khoang commune is a purely agricultural production, the distance from the most remote village to Dien Bien Phu city is 40km, and the distance from the nearest village to the City is 20km. There is no market in Pa Khoang Commune, and all trading activities happened in the village only. Vegetable cultivation of the people in the commune is mainly HH self-production and serving or just exchanging/sharing with other households in the village.

The project's support for vegetable cultivation aims at diversifying food sources for local people and contributing to the reduction of overexploitation of NTFPs from the forests. The project supports up to 5 vegetable seed varieties per household that selected from the 8 varieties of

vegetables introduced by the project and is divided into 2 crop seasons of Fall-Winter (tungho, Chinese broccoli, kohlrabi, onions, and garlic) and Spring-Summer (zucchini, Chinese broccoli, and choysum).

9.2. Carried-out work

a. Technical assistance

The project has organized 23 technical training courses for 763 participants from 21 villages on vegetable cultivation for Fall-Winter crop. The Project only provided materials for the people but did not organize training for Spring-Summer crop.



Image 36 . Technical training on sowing seeds



Image 37. Vegetable cultivation

The training (both theory and practice) was conducted on the field. The farmers were instructed to prepare land, make soil beds, and apply fertilizer, with density and planting techniques applicable for each vegetable variety.



Image 38: Project staff checking vegetable growing in Xom 2 village



Image 39: Japanese expert visited vegetable garden of a HH in Pa Tra village

b. Provision of seeds/seedlings

The project has provided seeds to the HHs after the training. For Fall-Winter crop, the project has provided to 746 HHs with 5 varieties of vegetable seeds like Chinese broccoli, tungho, kohlrabi, onion, and garlic; for spring-summer crop, the Project has provided 3 vegetables varieties for 728 HHs like choysum, Chinese broccoli, and zucchini. In both crops, each household did not receive more than 5 varieties of vegetable seeds. Results of provision of vegetable seeds are presented in below Tables 20 and 21.

Table 20. Quantity of seeds for Fall-Winter season provided to villagers (gram)

No.	Village	HHs	Varieties and quantity of support seedlings/seeds				
			Mustard green	Kohlrabi	Tungho	Onion	Garlic
1	Ha 1	21	400	55	280	8,500	3,000
2	Ha 2	34	1,240	25	840	16,000	5,000
3	Dong Met 1	66	1,600	100	1,440	30,000	30,500
4	Dong Met 2	58	1,120	25	720	28,000	28,500
5	Co Muong	22	40	55	160	10,500	11,000
6	Xom 1	38	200	45	400	16,000	18,500
7	Xom 2	48	800	80	480	23,000	23,500
8	Xom 3	42	80	75	760	16,500	16,000
9	Nghiu1	48	160	40	720	22,500	19,500
10	Nghiu2	41	640	110	240	19,500	17,000
11	Vang 1	26	800	15	160	13,000	12,500
12	Vang 2	42	920	185	1,040	12,500	10,000
13	Bo	29	1,160	-	480	10,500	9,000
14	Pa Tra	18	280	20	160	8,500	8,500
15	Co Cuom	18	80	-	320	8,500	8,000
16	Ten	37	480	10	160	17,000	17,000
17	Cong	23	160	5	320	11,000	11,000
18	Keo	39	40	35	120	19,000	19,000
19	Pu Sung	34	160	55	200	17,000	15,000
20	Co Thon	37	-	185	1,480	18,500	-
21	Sang	25	480	55	280	12,500	10,500
Total		746	10,840	1,175	10,760	38,500	293,000

9.3. Monitoring and evaluation

The facilitators were assigned to monitor and provide technical support to the households after they received vegetable seeds. In December, the project, together with the facilitators, organized a visit to all participating HHs to check result of vegetable cultivation and it showed that germination rate of vegetable seeds was 83%. The germination rate of kohlrabi and

chinese broccoli was low as it took 10-12 days for germination under sufficient moisture conditions, while the HHs only watered it during the first 2-3 days after cultivating.

According to the HHs, the Project’s support for vegetable cultivation brought a variety of vegetables for them, helped them save costs and improved their living standard. In addition, they have had opportunity to learn about techniques of planting new vegetable species such as zucchini and kohlrabi.

Image 40: Support for vegetable cultivation



Table 21. Quantity of seeds provided to villager for Spring-Summer season

No.	Village	HHs	Varieties and quantity		
			Brassica integrifolia (gram)	Zucchini (seed)	Chinese Broccoli (gram)
1	Ha 1	20	900	200	240
2	Ha 2	25	400	200	440
3	Dong Met 1	68	2,550	150	880
4	Dong Met 2	58	2,600	290	880
5	Co Muong	19	850	130	280
6	Xom 1	36	1,750	290	600

7	Xom 2	42	1,600	140	660
8	Xom 3	39	1,150	270	440
9	Nghiu1	37	1,700	330	640
10	Nghiu2	38	1,550	100	620
11	Vang 1	28	1,400	-	560
12	Vang 2	46	800	370	680
13	Bo	28	700	240	480
14	Pa Tra	18	800	50	360
15	Co Cuom	18	900	30	340
16	Ten	38	1,050	290	560
17	Cong	27	1,150	210	440
18	Keo	40	1,300	240	440
19	Pu Sung	37	1,450	250	440
20	Co Thon	41	2,050	-	820
21	Sang	25	150	120	460
Total		728	26,800	3,900	11,260

9.4. Encountered problems and solutions

Vegetable cultivation is a familiar with the people in Pa Khoang as many of them have been cultivating local varieties of vegetable like Mèo mustard green and spicy mustard green. These varieties germinate in a short time and are very easy to be cultivated and maintained. However, the people are unfamiliar with the new varieties of vegetable such as kohlrabi, zucchini, and Chinese broccoli that introduced by the Project, thus, the germination was not high. Therefore, the project staff and facilitators have to check regularly to remind them to follow the technical requirements.

10. Provision of improved stoves

10.1. Introduction

Pa Khoang is one of the extremely difficult mountainous communes of the province with different ethnic minorities. According to the results of the socio-economic survey in 2016, there are 06 ethnic minority groups living in Pa Khoang commune namely Thai, Kho Mu, H'Mong, Kinh, Muong, and Dao. The Thai group account for the highest proportion of 62%, followed by the Kho Mu with 37%, the remaining 4 ethnic groups account for only 1%. The local people live with their traditional customs and practices of using firewood for cooking and heating, especially during winter. According to the report on the socio-economic survey in 2016, from 2014 to 2016, on average, every HH in Pa Khoang commune exploit a quantity of firewood which is equivalent to 1.25 billion VND per year.

In order to reduce firewood collection pressure from forests, the Project has provided improved stoves to the local HHs. The improved stoves contribute to not only save fuel but also time spending for firewood

collection. The improved stoves also indirectly contribute to improve HH economics.

10.2. Provision of improved stoves (Laos stove)

Having drawn a lesson-learnt from the SUSFORM-NOW Project, the SNRM Project has brought to the local people Laos stoves. Receiving HHs contributed 50% of stove value to the VF. Having introduced by the Project, 374 HHs registered to purchase 375 stoves. However, after being informed about stove price and the amount each HH have to contribute to the VF, the number of HHs who really wanted to buy stoves reduced to 262. These 262 HHs registered to purchase 270 stoves. Quantity of stoves provided to the villages shown in the table 22.



Image 41, 42. Provision of stoves and contribution to the VF

10.3. Monitoring and evaluation

According to HH interview result, the Laos stove helped them to save 20-30% of firewood compared to the traditional ones. The stove can be used easily and save cooking time as it keeps heat.

After the first provision of stoves, many other HHs wished to be supported by the Project, thus, a plan of stove provision to the remaining registered HHs has been developed and will be implemented in the beginning of June 2018.

10.4. Encountered problems and solutions.

The Project did not face with much difficulty while implementing this activity. The contribution to the VF by the participating HHs was done smoothly as the amount was relatively small, just VND 70,000/stove. However, there is an inconvenience in using the stoves as people have to cut firewood. This will no longer be an issue if the local HHs understand the benefits brought by the stoves.

Image 43: provision of improved stoves



Table 22. Quantity of provided improved stoves

No.	Village	HHs	Quantity of stoves	Contributed amount to the VF
1	Ha 1	3	3	210,000
2	Ha 2	4	5	350,000
3	Dong Met 1	28	28	1,960,000
4	Dong Met 2	51	53	3,710,000
5	Co Muong	9	9	630,000
6	Xom 1	4	4	280,000
7	Xom 2	7	7	490,000
8	Xom 3	13	13	910,000
9	Nghiu1	22	24	1,680,000
10	Nghiu2	32	32	2,240,000
11	Vang 1	3	3	210,000
12	Vang 2	5	5	350,000
13	Bo	8	8	560,000
14	Pa Tra	12	13	910,000
15	Co Cuom	5	5	350,000
16	Ten	15	15	1,050,000

17	Cong	2	2	140,000
18	Keo	20	21	1,470,000
19	Co Thon	4	5	350,000
20	Sang	15	15	1,050,000
Total		262	270	18,900,000

APPENDIXES

Appendix 1: Decision on establishment of CPMU

Appendix 2: Decision on establishment of Dien Bien PPMU

Appendix 3: List of facilitators

Appendix 4: Operational regulation of the VMBs

Appendix 5. Operational regulation of the FPTs

Appendix 6. Training materials for af/reforestation

Appendix 7. Materials for boundary demarcation

Appendix 8. Revised village regulation on forest protection and development

Appendix 9. Synthesis table

1. Monitoring indicators for establishment of VMBs and FPTs

<i>Task</i>	<i>Training/provided materials</i>	<i>Number of established VMBs/frequency of meeting</i>	<i>Village regulation on forest protection and development</i>	<i>Village Fund</i>	<i>Economic impact (generate income/save labor cost)</i>	<i>Status of the village groups</i>	<i>Impacts of village groups (marketing, group purchasing, access to financial sources)</i>
Establishment of VMBs	Training for VMB members on establishment and operation	21 VMBs have been established	21 revised village regulations on forest protection and development has been approved by Dien Bien DPC	- VND 394,934,750 contributed to the VF by the local HHs and PFES. - VND 233,466,250 spent for forest protection work and micro finance. - VF balance: VND 161,468,500	VMBs have provide micro finance to the local HHs for their production development.	All members of VMBs follow their operational regulation.	The local HHs can access to the VMB micro finance easily with preferred interest rate.
Establishment of FPTs	Training on forest patrolling, recording and reporting	21 village FPTs have been established	Regulations of 21 FPTs have been developed	-	-	21 village FPTs follow the operational regulations	The work of FPTs helped to protect both SUF and production forests

2. Monitoring indicators on village boundary demarcation

<i>Tasks</i>	<i>Village</i>	<i>Length of village boundaries</i>	<i>Decisions/resolutions (year, type)</i>	<i>Conflicted area</i>
Village boundary demarcation	21 bản	59.038 km is length of demarcated boundaries between villages (no duplication)	Pa Khoang CPC issued a decision approving boundary demarcation in 2018. Reference: - SUF planning map and production forest allocation map - PFES map - Forest inventory map - Af/reforestation design map in 2017	No conflict area

3. Monitoring indicators for af/reforestation

<i>Task</i>	<i>Training/materials</i>	<i>Beneficiaries</i>	<i>Planted area</i>	<i>Survival rate</i>
Af/reforestation	205 participating HHs have participated in the training and received training materials	205 participants. 165 HHs have received 84,778 tree seedlings to plant on 74.55 ha	74,55 ha	Michelia >90%; Canarium >95%, Schima wallichii Choisy = 80%, Pinus = 65%
Scattered tree planting	826 HHs have participated in the training and received training materials	826 HHs have received 15,575 tree seedlings to plant	15,575 seedlings have been provided to HHs to plant on 15.5 ha	Michelia: 85%; Grafted canarium: 69%; Dracontomelon: 84%; and Chukrasia tabularis: 91%.

3: Monitoring indicators for livelihood development

No.	Activity	Training/materials	Beneficiaries	Applied techniques	Impact (increase production/save energy)	Economic impacts (generate income/save labor cost)	Village organization (status)	Impacts of village groups (marketing, group purchasing, access to financial sources)
1	<p>Beekeeping</p> <ul style="list-style-type: none"> 1) Technical assistance: <ul style="list-style-type: none"> - Technical training - Moving from traditional hives to modern hives 2) Provision of hives and supplies/materials 	<ul style="list-style-type: none"> 1) Training materials 2) Hives (frames, separate sheets): 90 hives. 3) Technical assistance and moving bees to 33 modern hives. 4) Provision of supplies/materials : sugar: 33kg, wax foundation: 165 pcs., and 23 head covers, 23 gloves, 3 smoke makers, 6 knives, 6 beeswax spur embedder tools 	<ul style="list-style-type: none"> 1) Technical training for 30 participants 2) Provided 30 hives for beekeepers. 3) Technical assistance and provision of supplies for 23 HHs. 	<ul style="list-style-type: none"> 1) Technique of beekeeping in modern hives 2) Technique of moving bees from old to modern hives 	<ul style="list-style-type: none"> - Enhance technique application to beekeepers 	-	-	-

No.	Activity	Training/materials	Beneficiaries	Applied techniques	Impact (increase production/save energy)	Economic impacts (generate income/save labor cost)	Village organization (status)	Impacts of village groups (marketing, group purchasing, access to financial sources)
2	Fish raising 1) Technical assistance: - 1 st technical training on fish raising: pond preparation. - 2 nd technical training on fish raising: Fish releasing, maintenance, and disease prevention 2) Provision of lime 3) Provision of fingerlings and pond disinfectant chemical	1) Training materials 2) Provision of lime: 17,830 Kg 3) Provision of fingerlings, of which, 200,400 grass carp; 80,160 tilapia, 60,120 Mrigal carp, 40,080 bighead carp, and 20,040 common carp. 4) Res-cus for pond disinfectant: 153 liters.	1) 1 st technical training for 170 HHs 2) 2 nd Technical training for 165 HHs. 3) Provision of lime for 165 HHs. 4) Provision of fingerlings and res-cus for pond disinfectant for 153 HHs.	1) Technique of pond disinfection and pond preparation 2) Techniques of fish releasing, maintenance, and disease prevention	1) Enhance fish raising technique application for the local HHs	1) VND 259,201,000 VND contributed to the VF 2) The poor HHs have opportunities to access loans for development of HH economics.	-	-

No.	Activity	Training/materials	Beneficiaries	Applied techniques	Impact (increase production/save energy)	Economic impacts (generate income/save labor cost)	Village organization (status)	Impacts of village groups (marketing, group purchasing, access to financial sources)
3	Fruit tree cultivation 1) Technical training on fruit tree cultivation and maintenance applicable for some fruit tree species 2) Provision of seedlings	1) Training materials 2) Seedlings: 912 Dien pomelo seedlings, 1,426 green cover seedlings, 897 Thai mango seedlings, 4,451 Taiwan mango seedlings, 3,654 plum seedlings, 3,779 velvety peach seedlings, 1,083 crispy persimmon seedlings, 705 hybrid pear seedlings, and 2,400 lime seedlings.	1) Technical training for 869 HHs. 2) Provision of fruit trees for 869 HHs.	1) Technique of seedling selection and time for cultivation 2) Hole digging and filling 3) Technique of fertilizer application 4) Pets/disease prevention 5) Techniques of pruning and canopy creating	1) Enhance techniques of planting and maintenance of fruit tree cultivation for the participating HHs.	1) VND 107,723,750 contributed to the VFs. 2) The poor HHs have opportunities to access loans for development of HH economics.	-	-
4	Vegetable cultivation 1) Technical training on	Training materials Provision of 654,275 gram of vegetable seeds for Fall-Winter season, of	1) Technical training for vegetable cultivation	1) Technique on tending of some vegetable	1) Most of people applied trained	1) The HHs have harvested vegetable	-	-

No.	Activity	Training/materials	Beneficiaries	Applied techniques	Impact (increase production/save energy)	Economic impacts (generate income/save labor cost)	Village organization (status)	Impacts of village groups (marketing, group purchasing, access to financial sources)
	vegetable cultivation 2) Provision of seeds for Fall-Winter and Spring-Summer seasons	which, 10,840 grams of Chinese broccoli, 1,175 grams of kohlrabi, 10,760 grams of tungho; 338,500 grams of onion; 293,000 grams of garlic.	for Fall-Winter season with participation of 763 HHs. 2) Provision of seeds for Fall-Winter season for 746 HHs. 3) Provision of seeds for Spring-Summer season for 728 HHs	species during Fall-Winter season. 2) Organic compost technique 3) Cultivating and tending techniques for zucchini, Chinese broccoli, and mustard green	techniques for vegetable cultivation.	for domestic use, saving time from collection of vegetable from forests and money used for buying vegetable		
5	Provision of improved stoves (Laos stoves)	1) Laos stoves provided for the 1 st time: 270 pcs.	1) Laos stoves provided for 262 HHs for the 1 st time.	1) The stove is large inside with air hole, but close	1) Save firewood and time compared	1) VND 18,900,000 contributed to the VFs.	-	-

No.	Activity	Training/materials	Beneficiaries	Applied techniques	Impact (increase production/save energy)	Economic impacts (generate income/save labor cost)	Village organization (status)	Impacts of village groups (marketing, group purchasing, access to financial sources)
				<p>from the outside to concentrate flame and maintain heat.</p> <p>2) Easy to move and less smoke</p>	to traditional stoves.	2) Save firewood and time for collection of firewood from forests.		