

**Vietnam Administration of Forestry
Ministry of Agriculture and Rural Development
Department of Agriculture and Rural Development
of Dien Bien Province**

**THE SOCIALIST REPUBLIC OF
VIET NAM
DIEN BIEN REDD+ PILOT PROJECT
FINALE REPORT**

Appendix “COMMUNE REDD+ ACTION PLAN IN THE
PERIOD 2013-2020 IN MUONG MUON COMMUNE”

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**Japan International Cooperation Agency
(JICA)**

**Japan Overseas Forestry Consultants Association
(JOFCA)**

**Japan Forest Technology Association
(JAFTA)**

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**COMMUNE REDD+ ACTION PLAN
IN THE PERIOD 2013-2020
IN MUONG MUON COMMUNE**

Dien Bien, February 2014

Abbreviation

CPC	Commune People's Committee
C-RAP	Commune REDD+ Action Plan
DARD	Department of Agriculture and Rural Development
DONRE	Department of Natural Resources and Environment
FMP	Forest Management Plan
FPDP	Forest Protection and Development Plan
GHG	Greenhouse Gas
HH	Household
LDP	Livelihoods Development Plan
MARD	Ministry of Agriculture and Rural Development
MCPFMB	Muong Cha Protection Forest Management Board
MM	Muong Muon
MP	Muong Phang
MRV	Measurement, Reporting, and Verification
NTFP	Non Timber Forest Product
PFES	Payment for Environmental Services
PPC	Provincial People's Committee
PRAP	Provincial REDD+ Action Plan
REDD+	Reducing Emissions from Deforestation and Forest Degradation and Conservation of Forest Carbon Stocks, Sustainable Management of Forest, Enhancement of Forest Carbon Stocks
SG	Sub-Group
VFMR	Village Forest Management Rule
VMBFMLD	Village Management Board for Forest Management and Livelihoods Development
VND	Vietnamese dong

Table of Contents

Introduction -----	1
I. Legal basis and documents used for preparing the C-RAP -----	2
1. Legal basis -----	2
2. Used documents-----	2
II. Natural and socio-economic conditions of Muong Muon commune-----	3
1. Natural conditions of Muong Muon commune -----	3
2. Socio-economic conditions -----	4
2.1. Demographic characteristics -----	4
2.2 Economic status -----	5
2.3. Production activities -----	6
3. Issues of forest protection and development in Muong Muon commune-----	8
III Commune REDD+ Action Plan-----	9
1. Overall goal-----	9
2. Specific objectives-----	9
3. Key Tasks -----	9
3.1 KeyTask for forest protection, regeneration, and afforestation-----	9
3.2 Key Tasks for the forest change monitoring system-----	10
3.3 Key Tasks for livelihoods development -----	10
3.4 Key Tasks for enhancing the institutional framework for forest management and livelihoods development -----	11
3.5 Key Tasks for capacity development for CPC staffs and villagers -----	11
4. Solutions-----	11
4.1 Solution for promoting forest protection, regeneration, and afforestation -----	11
4.2 Solution for establishing and operating forest change monitoring system-----	14
4.3 Solution for promoting livelihood development for the villagers -----	17
4.4 Solution for establishing and strengthening institutional framework for forest management and livelihoods development considering REDD+ activities-----	20
4.5 Solutions for strengthening CPC staff and villager capacities in forest management and livelihoods development-----	23
IV. Implementation arrangement-----	25
V. Implementation cost and funding sources -----	26
1. Implementation cost-----	26
2. Funding sources-----	28
3. Financial solution-----	28
VI Monitoring and evaluation of C-RAP implementation-----	28
Appendix: Activities under the solutions-----	30

Introduction

Keenly aware that “acting to address climate change is a life-or-death issue”, the Vietnamese Government promulgated Decision No. 799/QĐ-TTg on 27th June 2012, thus launching a national REDD+ Action Program. This program specifies that Vietnam will implement activities designed to (i) reduce deforestation and forest degradation, (ii) help achieve sustainable management of forest resources, (iii) enhance forest carbon stocks, and (iv) conserve biodiversity. All the above will also contribute to the national goals of poverty alleviation and sustainable development. Consistent with the aforementioned Decision, the Ministry of Agriculture and Rural Development (MARD) is authorized and mandated to select at least eight provinces with high potentials for reducing emissions from deforestation and/or forest degradation. The selected provinces shall be typical representatives of different ecological regions. These provinces shall participate in REDD+ pilot projects, in compliance with specific conditions of Vietnam and support from the international community. Activities to be piloted at the provincial levels are summarized below:

- Development of provincial REDD+ action programs;
- Integration of REDD+ with other provincial plans and master plans that focus on forest protection, development, and land use;
- Incorporate REDD+ with other projects/programs on emission reductions in agriculture and other related sectors;
- Develop a pilot system of REDD+ management, coordination and operational mechanisms at the provincial level;
- Enhance awareness and technical capacity on REDD+ for relevant officers at the provincial, district and commune levels, while also creating similar awareness among forest owners and the populations of local communities;
- Identify and implement appropriate measures for reducing GHG emissions from deforestation and forest degradation, stabilizing and enhancing the forest carbon stock;
- Study the potential participatory roles in REDD+ implementation of enterprises, organizations, individuals and local communities.
- Propose and pilot a provincial forest monitoring system that includes participatory inventory, monitoring, and review of forest change along with mechanisms for financial management and benefit sharing of outcomes from REDD+ implementation;
- Develop databases and information systems for REDD+ implementation;

Pursuant to the respective Provincial REDD+ Action Plan, a commune REDD+ action plan (hereafter, C-RAP) will be prepared in each commune. In this connection, the Muong Muon commune of Muong Cha district has been chosen as one of the two areas for implementing pilot REDD+ activities. The other is Muong Phang commune of Dien Bien district.

C-RAP will show the forest management objectives to be attained : i.e. afforestation objectives, regeneration objectives, and forest protection objectives. The C-RAP will also identify livelihoods improvement objectives and plans.

Furthermore, the C-RAP will quantify the resources (land, manpower, knowledge and supports) needed to implement the plans, identify ways to efficiently use these resources in order to reduce green-house

gas emissions, and increase carbon stock in the forests of Muong Muon commune during the period from 2013-2020. C-RAP shall consist of 6 parts:

- Legal basis and materials used for preparing the C-RAP
- Natural and socio-economic conditions of Muong Muon commune
- The main part of the C-RAP
- Implementation arrangements
- Implementation cost and funding sources
- Monitoring and evaluation of C-RAP implementation

I. Legal basis and documents used for preparing the C-RAP

1. Legal basis

- Law on Land, dated November 26th, 2003;
- Law on Forest Protection and Development, dated December 03rd, 2004;
- Law on Environment Protection, dated November 29th, 2005;
- Decree No. 23/2006/ND-CP of the Government, dated 3rd March 2006 on implementation of the Law on Forest Protection and Development;
- Decision No. 186/2006/QD-TTg of the Prime Minister, dated 14th August 2006, on promulgation of Forest Management Regulations;
- Decision 799/QD-TTg of the Prime Minister dated June 27th, 2012 approving the National Action Program on “Reducing Emissions from Deforestation and Forest Degradation, Sustainable Forest Management, Conservation and Enhancement of Forest Carbon” in period of 2011 – 2020;
- Decree No. 99/2010/ND-CP of the Government, dated September 24th, 2010, on the Policy of Payment for Forest Environmental Services;
- Decision No. 2284/2010/QD-TTg, dated December 13th, 2010 on implementation of Decree No. 99/2010/ND-CP of the Government, dated September 24th, 2010 on the Policy of Payment for Forest Environmental Services;
- Decision 1764/QD-BNN-HTQT of the Ministry of Agriculture and Rural Development dated July 26th, 2012 approve the Technical Cooperation Project to Pilot REDD+ in Dien Bien;
- Decision No. 1050/QD-UBND by Dien Bien PPC dated 19 November 2012 approving the Forest Protection and Development Plan for Muong Cha district from 2012 to 2020;
- Circular 05/2008/TT-BNN of the Ministry of Agriculture and Rural Development dated January 14th, 2008 providing guidance on how to make master plans on forest protection and development;
- Decision No. 147/2007/QD-TTg of the Prime Minister dated September 10th, 2007 on several policies regarding the development of production forest in the period of 2007 – 2015;
- Decision No. 106/2006/QD-BNN of the Ministry of Agriculture and Rural Development dated November 27th, 2006 promulgating guidance on the management of village community forests

2. Used documents

- Resolution of 12th Congress of Dien Bien Provincial Communist Party of Tenure 2010-2015;

- Plan 388/KH-UBND, dated on February 20, 2013 of the Dien Bien Provincial People's Committee on reviewing and completing of procedures on land allocation, forest allocation and granting certificates on forestland use rights in the period of 2013 – 2015 in Dien Bien province;
- Explanation report on Forest Protection and Development Plan of Dien Bien province in the period of 2009 – 2020, which was approved by Decision No. 2117/QD-UBND, dated on December 02nd, 2009 of Dien Bien PPC;
- Report on Project of planning for New Rural Development of Muong Muon commune of Muong Cha district in the Period 2011-2020;
- Report on Results of Socio-Economic survey in Muong Muon commune, implemented by the Dien Bien REDD+ Pilot Project in May, 2013;

II. Natural and socio-economic conditions of Muong Muon commune

1. Natural conditions of Muong Muon commune

Muong Muon commune is located in the southern part of Muong Cha district. It is bordered on the North by Na Sang commune, on the South by Muong Pon and Na Tau communes of Dien Bien district, on the East by Muong Mun and Na Say communes of Tuan Giao district, and on the West by the Lao People's Democratic Republic. High mountains, hilly terrain, and steep-rugged slopes are outstanding topographical features. The Muong Muon mountains have an average elevation of 600 m above the sea level and slope gradients ranging from 30^o up to 38^o. This topography is not favorable for agricultural production, exchange of products and efforts to improve the local people's living conditions. Muong Muon commune has a tropical monsoon montane climate with 2 distinct seasons: rainy from April to October and dry from November to March. The annual rainfall is between 1,750 – 2,050 mm, with the heaviest rainfall occurring during June, July and August. The annual average temperature is 22.25^oC. However, these are data collected at the lower elevations of the commune. In the higher elevations, the average temperature is about 10^oC lower than in the lowlands. Most of the lands in Muong Muon comprise the watershed catchment area of the Da river. This important river provides water for electric power generation and agricultural production in the downstream Tonkin (Red River) delta, which is Vietnam's second biggest rice bowl. Cadastral statistics show a total of 13,445 ha in Muong Muon. Approximately 1,564 ha are used to grow food crops including 41.5 ha of paddy rice field, 206.8 ha of hilly land rice farms, 392.3 ha of annual non-rice crops, 275.3 ha of perennial crops and 1.7 ha of aquaculture ponds. Decision No. 714/QD-UBND of Dien Bien PPC, dated September 16, 2013, mandates the conversion and classification of land areas into 3 forest types. This Decision states that the total forestland area in Muong Muon commune is 12,528 ha. That total includes 4,598.8 ha planned for special use forests, of which 2,133 ha are forested land and 1,855 ha are non-forested land. The area planned for protection forests covers 1,746 ha, comprising 339 ha of forested land and 1,407 ha that are not forested. The total planned for production forest is 6,974 ha of which 2,713 ha are forested and 4,081 ha do not have forest cover. From the statistics noted above, it is clear that 93.18% of the land in Muong Muon commune is identified and planned for forest development, following current laws and policies. Given the provisions of these laws and policies, the CPC and local people are required to use the land consistent with the plans and classifications contained in Decision No. 714/QD-UBND. In other words, land use by the local people must prioritize afforestation, regeneration to restore forests on the existing bare-land, and implementation of forest protection activities.

2. Socio-economic conditions

2.1. Demographic characteristics

The residents in Muong Muon commune belong to four ethnic groups; i.e. H'mong, Khmu, Thai and Kinh,. The H'mong comprises the largest group with 53% of the population. Some 27.6% are Khmu and there are 18.9% Thai. The Kinh people make up only 0.5% of the total population.

Table 2.1 Population by ethnicity and village

#	Village	Hmong		Kinh		Khmu		Thai		Total	
		# of HH	HH member	# of HH	HH member	# of HH	HH member	# of HH	HH member	Total of HH	Total of HH members
1	Huoi Ho	28	193							28	193
2	Huoi Meo	83	550							83	550
3	Huoi Nha	22	146							22	146
4	Huoi Vang	47	281	2	8	37	177	2	7	88	473
5	Ket Tinh	21	141							21	141
6	Muong Muon 1			1	2			76	358	77	360
7	Muong Muon 2							81	333	81	333
8	Pu Cha	26	188							26	188
9	Pu Mua	64	465							64	465
10	Pung Giat 1					77	396			77	396
11	Pung Giat 2					85	446			85	446
	<i>Total</i>	<i>291</i>	<i>1,960</i>	<i>3</i>	<i>10</i>	<i>199</i>	<i>1,019</i>	<i>159</i>	<i>698</i>	<i>652</i>	<i>3,687</i>

(Source: Report on results of socio-economic survey in Muong Muon commune., May 2013, Dien Bien REDD+ Pilot Project)

According to survey data collected in April 2013, 49.9% of the population belong to the working age group. Most of them are involved in the agriculture and forestry sectors. Very few local residents have received technical skills training. Consequently, they are expected to face huge challenges understanding and applying technology relevant to participatory implementation of livelihood development activities.

Table 2.2 Population structure by age class

No	Village	Population structure by age class		
		Under 18	Between 18-60	Above 60
1	Huoi Ho	49.2	50.8	0
2	Huoi Meo	34.9	60.0	5.1
3	Huoi Nha	56.8	41.1	2.1
4	Huoi Vang	46.0	50.5	3.5
5	Ket Tinh	58.9	39.7	1.4
6	Muong Muon 1	41.9	51.7	6.4
7	Muong Muon 2	32.4	62.5	5.1
8	Pu Cha	52.2	45.8	2.0
9	Pu Mua	56.7	41.1	2.2
10	Pung Giat 1	36.9	57.5	5.6
11	Pung Giat 2	45.2	48.4	6.3

(Source: Report on results of socio-economic survey in Muong Muon commune,, May 2013, Dien Bien REDD+ Pilot Project)

2.2 Economic status

Most of the households in Muong Muon belong to the poor and near-poor groups. In April 2013, 57.8% of all households in Muong Muon commune were found to be poor, and 17.8% near-poor. Meanwhile 21.6% are classified as having average/moderate income. Only 2.8% are considered to be financially well-off. In terms of location, the poor households are concentrated mainly in the 5 remote H'mong villages (namely Huoi Meo, Huoi Nha, Ket Tinh, Pu Cha and Pu Mua). In those villages 100% of the households are poor. In the remaining villages, the percentage of poor households ranges from 21.4% to 45%.

Table 2.3 Household economy

No	Village	Better-off HH		Moderate HH		Near-poor HH		Poor HH	
		No of Households	Ratio (%)	No of Households	Ratio (%)	No of Households	Ratio (%)	No of Households	Ratio (%)
1	Huoi Ho			18	64.3	4	14.3	6	21.4
2	Huoi Meo							83	100
3	Huoi Nha							22	100
4	Huoi Vang	5	5.7	20	22.7	23	26.11	40	45.5
5	Ket Tinh							21	100
6	Muong Muon 1			26	33.7	23	29.8	28	36.4
7	Muong Muon 2			37	45.7	21	25.9	23	28.4
8	Pu Cha							26	100
9	Pu Mua							64	100
10	Pung Giat 1	8	10.4	13	16.8	23	29.9	33	42.9
11	Pung Giat 2	5	5.9	27	31.8	22	25.9	31	36.5

(Source: Report on results of socio-economic survey in Muong Muon commune, May 2013, Dien Bien REDD+ Pilot Project)

2.3. Production activities

2.3.1 Cultivation

Farming is the principal production activity in the commune. The main species grown are food crops such as rice, maize, cassava, sweet potato, etc. Due to existing constraints such as very small area suitable for agriculture, complicated topography, and primitive technical practices, there is no indication of any advanced technology being applied. Residents simply depend on the prevailing natural conditions of soil fertility, rainfall and the like. Consequently, crop harvest yields are low.

Table 2.4 Rice cultivation by households

No	Village	HH with water rice cultivation only		HH with hill rice cultivation only		HH with both paddy rice and hill rice cultivation	
		Number	Ratio (%)	Number	Ratio (%)	Number	Ratio (%)
1	Huoi Ho			28	100		
2	Huoi Meo			83	100		
3	Huoi Nha			22	100		
4	Huoi Vang	3	3.4	57	64.8	28	31.8
5	Ket Tinh			21	100		
6	Muong Muon 1					76	98.7
7	Muong Muon 2	17	21			64	79
8	Pu Cha			26	100		
9	Pu Mua			39	60,9	25	39.1
10	Pung Giat 1					77	100
11	Pung Giat 2					85	100

(Source: Report on results of socio-economic survey in Muong Muon commune, May 2013, Dien Bien REDD+ Pilot Project)

Table 2.5 Average per-HH cultivation area by village

#	Village	Average per-HH cultivation area by cultivated crop (m ²)					
		Water rice	Hill rice	Cassava	Maize	Home garden	Fallow area
1	Huoi Ho	0	14500	1000	1700	0	30000
2	Huoi Meo	0	10000	400	600	100	12000
3	Huoi Nha	0	10000	3200	0	0	800
4	Huoi Vang	1000	1700	300	2200	200	5000
5	Ket Tinh	0	19000	200	7000	0	9500
6	Muong Muon 1	1100	2000	2200	2300	0	1000
7	Muong Muon 2	2500	1700	1900	1500	0	600
8	Pu Cha	0	10000	500	200	0	11500
9	Pu Mua	0	4700	0	3900	100	4600
10	Pung Giat 1	2500	2000	400	700	0	4000
11	Pung Giat 2	2000	2300	2100	4700	0	5000

(Source: Report on results of socio-economic survey in Muong Muon commune, May 2013, Dien Bien REDD+ Pilot Project)

Diverse land use patterns are applied on sloping terrain. The patterns applied depend on natural conditions in each village, food security and the implementation of land management policies. The following tables describe the most common patterns found through village interviews.

Pattern 1:

Hill rice cultivation	Fallow period	Hill rice cultivation	Fallow Period
2 -3 crops	2-3 years	2 -3 crops	2-3 years	

Pattern 2:

Hill rice cultivation	Cassava cultivation	Fallow period	Hill rice cultivation
2-3 crops	2-3 crops	2-3 years	2-3 crops	

Pattern 3:

Hill rice cultivation	Maize cultivation	Cassava cultivation	Fallow period	Cassava cultivation	Fallow period
2-3 crops	1-2 crops	1-2 crops	1-2 years	2-3 crops	1-2 crops

2.3.2 Animal husbandry

In addition to growing crops, some local residents are engaged in animal husbandry at various levels in terms of quantity, quality and the species raised. Due to limited knowledge and funds, animal husbandry is principally household-scale production for local consumption. This activity does not make significant contributions to household income. Moreover, villagers do not generally pay much attention to prevention of diseases, construction of suitable facilities such as sheds, or the production and storing of feeds for livestock and poultry during the winter. Given these deficiencies, diseases spread rapidly and many animals die. In several villages, free grazing is being practiced. This has negative impacts on forest protection and development because roaming cattle harm the plantation.

Table 2.6 Animal husbandry by village

#	Village	Cow		Buffalo		Pig		Goat		Chicken		Duck		Horse	
		# of Households	No of heads	No of House holds	No of heads	No of House holds	No of heads	No of House holds	No of heads	No of House holds	No of heads	No of House holds	No of heads	No of House holds	No of heads
1	Huoi Ho	1	2	28	40	28	40	2	20	28	300	0	0		
2	Huoi Meo	30	37	10	26	80	215	40	85	83	500	0	0		
3	Huoi Nha	6	8	8	15	22	22	2	8	21	100				
4	Huoi Vang	33	83	54	88	20	100	6	20	80	300	5	40	4	6
5	Ket Tinh	1	4	7	14	17	27	6	15	21	150	0	0		
6	Muong Muon 1	7	26	76	129	77	350	0	0	*	*	10	100		
7	Muong Muon 2	8	26	56	129	75	350	1	4	81	670	6	47		
8	Pu Cha	19	40	14	20	26	52	6	25	26	260	0	0		
9	Pu Mua	9	75	33	135	40	280	9	51	41	300	3	15	20	20
10	Pung Giat 1	15	87	51	71	62	208	0	0	77	280	7	80		
11	Pung Giat 2	40	70	50	110	55	400	0	0	85	2000	30	1000		

(Source: Report on results of socio-economic survey in Muong Muon commune, May 2013, Dien Bien REDD+ Pilot Project)

2.3.3 Forestry activities

a) Forest protection and development

Forest protection and development activities in Muong Muon are small in scale, as noted below:

- Data from Muong Cha Protection Forest Management Board (MCPFMB) quantify the commune's man-made forest area at 162.3 ha. This forested area is protection forest produced with state funding of 14 households who planted trees in 2003, 2005 and 2010. However, document of Muong Muon New Rural Development Project in Period 2011-2020 report only 52 ha of man-made forest in the commune. This suggests that only 30% of the area planted eventually matured into forest.
- Protection of natural forest was done by a single HH in the commune during the period from 2009 to 2011 under a contract with MCPFMB. The contracted area was 643.5 ha. Results of an evaluation conducted by the MCPFMB indicate that the protection contract did not meet expectations. MCPFMB findings suggest that the principal reason for unsatisfactory performance is the low rate of payment. The amount earned from implementing a protection contract with much lower than opportunity cost of practicing upland cultivation on the same area.
- Up to the present time, no forest regeneration activities have been implemented at Muong Cha.

b) Collection of forest products

NTFPs collected by the commune residents include tiger grass (amliso), flowers, bamboo shoots, firewood, wild fruits and small amount of honey and bamboo. Except for amliso and flowers, most NTFPs are gathered more for home use than for sale. Over the last few years, there have been sharp reductions in both volume and varieties of NTFPs collected by the local people.

3. Issues of forest protection and development in Muong Muon commune

Forests in Muong Muon are severely degraded in terms of both area and quality. As emphasized in documents of the Muong Cha FPDP Project for the period from 2012 to 2020, deforestation, clearing of forestland for shifting cultivation and illegal logging have gone on unabated.

III Commune REDD+ Action Plan

1. Overall goal

Overall goals of the C-RAP are to contribute to sustainable development in the commune, increase and maintain forest cover, enhance forest carbon stock, conserve biodiversity and improve livelihoods of the local people through REDD+ implementation.

2. Specific objectives

- To develop and effectively implement sustainable forest management that enhances ecosystem services including watershed protection, disaster prevention, landscape preservation, carbon sequestration, biodiversity conservation, and production of forest commodities. This objective will be pursued by increasing the forest cover from 4,906.27 ha to 5,236.93 ha for 2015 and to 6,756.67 ha for 2020 as targeted value as described in the planning of New Rural Development for Muong Muon Commune in the period of 2011 - 2020.

- To develop sustainable livelihoods for the local population by supporting forest management activities that contribute to poverty reduction. The goals are to increase the average income of the villagers to VND 11 million per year by 2015, and the rate of poor households shall be reduced as much as possible by 2020 as described in the planning of New Rural Development for Muong Muon Commune covering the period from 2011 - 2020.

3. Key Tasks

3.1 Key Task for forest protection, regeneration, and afforestation

Forest management activities such as forest protection, regeneration, and afforestation are formulated and implemented based on Forest Protection and Development Plan (FPDP) including Payment for Forest Environmental Services (PFES). Promoting forest protection, regeneration, and afforestation through FPDP and PFES is a main task in C-RAP implementation. Key Tasks for each forest management activity are summarized in table 3.1 below.

Table 3.1 Key Tasks of forest protection and development in Muong Muon in the period of 2013-2020
(Unit: hectares)

No	Village	Activity and target			Total
		Forest protection	Forest regeneration	Afforestation and tending	
1	Muong Muon 1+2	618.7	381.3	158.0	1,158.0
2	Pu Cha + Huoi Nha	2,405.2	631.8	48.0	3,085.0
3	Huoi Vang	249.9	71.8	88.0	409.7
4	Pung Giat 1+2 & Huoi Ho	681.4	809.9	190.0	1,681.3
5	Pu Mua	384.3	271.7	64.0	720.0
6	Ket Tinh	249.1	139.4	21.0	409.5
7	Huoi Meo	1,204.9	182.9	83.0	1,470.8
	Total	5,793.5	2,488.8	652.0	8,934.3

Note: The numbers of hectares by task and by village are based on the FPDP planning map covering 2012-2020

3.2 Key Tasks for the forest change monitoring system

The Provincial REDD+ Action Plan (PRAP) stipulates that the operation of the improved Provincial Forest Monitoring System (PFMS) needs to be piloted, building on the basic features of the existing system.

In order to effectively implement an improved PFMS, it is essential to clarify the roles and responsibilities of each relevant stakeholder. This is especially imperative as regards refinement of the current forest-ranger-based monitoring system, and in terms of the crucial need for participatory involvement of villages and villagers in forest change monitoring.

Pilot implementation of an improved PFMS in Muong Muon Commune is intended to produce lessons learned for the design of an overall system that will be further replicated in the entire province from 2016 to 2020. Consequently, a review should be conducted by the middle of 2015. To help ensure successful operations of the improved PFMS, the review must study and evaluate technical and financial feasibilities, as well as cost-effectiveness in comparison with other possible PFMS options.

As noted in PFMS plans elaborated in the PRAP, it is indispensable for the following organizations and personnel to participate in forest monitoring at the commune level. Furthermore, it is essential to clarify the implementation responsibilities of each participating organization and individual.

- Villages (Villagers, Forest Owners, VMBFMLD, Patrolling teams under the VMBFMLD)
- Forest Owners (MCPFMB)
- Forest Rangers

The resources required to implement the PFMS need to be prepared. These resources include funds, technology, equipment, and availability of competent personnel. State funds will be utilized to implement the PFMS because forest monitoring is a routine work of the forest agency. However, there is a lack of technical skills such as capability to carry out satellite imagery interpretation and operation of GPS receivers. Additionally, key equipment requirements need to be provided including digital cameras and GPS receivers. Details relevant to these concerns are discussed below in the solutions of this report.

3.3 Key Tasks for livelihoods development

As noted earlier in Section 2.2 of Chapter II, most villagers live in poverty. They practice shifting cultivation within the forestland - not only for food security but also to generate cash income for daily household expenditures. Shifting cultivation almost always produces negative impacts on the forest. It is therefore crucial to develop and implement strategies and activities that will encourage the villagers to reduce shifting cultivation on areas planned for forestry. These strategies must aim at bringing about active participation of villagers in the implementation of forest management tasks. This objective can be pursued by creating alternative livelihood options and systems that support and lead to sustainable forest management.

Moreover, since Muong Muon Commune is a pilot commune for REDD+ implementation, it is necessary to build workable livelihood development models that can be replicated for other communes

in the province in the future. These models should be developed, tested and refined as needed for effective application, by the middle of 2015.

3.4 Key Tasks for enhancing the institutional framework for forest management and livelihoods development

The Commune Commanding Unit for Emergency Matters in Forest Protection and Forest Fire Fighting is the core unit responsible for C-RAP implementation. One of the key tasks in C-RAP implementation is the establishment of an appropriate and functional institutional framework for implementation of forest management activities, livelihood development and additional components. It is particularly significant to strengthen the institutional framework in ways that facilitate positive participation of villagers in those activities. Preparation of the institutional framework is crucially important for efficient and effective C-RAP implementation. Fundamental elements of an appropriate institutional framework include the organizational structure for implementation, funds management methods and procedures, and formulation of rules for forest management and livelihoods development activities. Moreover, as noted in the above, Muong Muon Commune is a pilot commune for REDD+ implementation. In this context, establishment of an appropriate and effective institutional framework should look forward to application of the framework for future replication in other communes of the province.

3.5 Key Tasks for capacity development for CPC staffs and villagers

Key Task to enhance knowledge and skills for staffs of CPC and villagers, Muong Cha Protection Forest Management Board (MCPFMB), and commune rangers as well as villagers directly involved in forest management and livelihoods development are needed to implement C-RAP and the details are given in the solution.

4. Solutions

4.1 Solution for promoting forest protection, regeneration, and afforestation

Villages and households will be main actors directly involved in forest protection, regeneration, and afforestation. CPC is responsible to cooperate with relevant organizations such as the Muong Cha Protection Forest Management Board (MCPFMB) and Dien Bien District FPD to assist villages in developing village-based Forest Management Plans (FMPs) including activities on forest protection, regeneration, and afforestation; preparing village forest management rules; providing technical guidance; and implementing and monitoring plans and regulations.

Programs and policies currently in force in Dien Bien province specify that protection of forested areas will be supported by procedures and mechanisms for application of the PFES scheme. On the other hand, forest development activities such as regeneration and afforestation are to be supported by FPDP. In areas where protection efforts under the PFES scheme eventually lead to a positive change in status, such that the area already qualifies for official recognition as forests, all subsequent regeneration and afforestation will be supported by the PFES scheme.

4.1.1 Forest protection under PFES and forestland allocation

Under the approved FPDP Project for Dien Bien district from 2012 to 2020 and Decision No. 1050/QĐ-UBND, The targeted areas for the activities of forest protection based on the FPDP are 5,793.4 ha. Contracts for forest protection shall be made with villages, households, and individuals to carry out forest protection activity. The villagers will be the people who will undertake regular patrolling for the areas allocated for forest protection and regeneration.

Forestlands of the commune are to be covered under the PFES scheme. Therefore, protection of forested areas will be supported with PFES payments derived from the provincial FPDP for the areas allocated to the villages, households or individuals.

Forest allocation is an important pre-condition for proper disbursement of PFES payments to the right targets for the right purposes. Plan No. 388/KH-UBND specifies that forested areas will be allocated before the end of 2014. However, the sooner forest and forestland allocations are implemented, the more promptly PFES payments can be disbursed.

To avoid conflicts and disputes that may arise during and after the allocation of forestlands and forest protection contract, the participatory of the villagers should be encouraged to be fully involved in every step of forestland allocation process, such as reviewing the areas allocated in accordance with Decree No. 163/ND-CP and field works involving placing marks. Forest allocation will make the forest with the owners, so that villagers as the owners will be more responsible in forest protection and development when they get benefits from the forest in accordance with PFES and other existing policies.

For the areas allocated and entitled to receive PFES payments, the forest owners must commit to faithfully implement forest protection measures such as forest fire management and regular patrolling to prevent illegal logging. At the end of each year, the FPDP will review all forested areas and disburse payments for the undamaged areas. If deforestation occurs, the forest owners will be required to explain the cause or causes for such occurrences. If the owners themselves caused the deforestation, they are subject to penalties as provided under current laws, rules and regulations.

It is important to link effective performance of forest protection with benefits received by the villagers. Towards these ends, there is a need to develop procedures and mechanisms governing the management and utilization of funds received from PFES payments. It is intended that part of the funds will support forest patrolling. Villagers who patrol the forest and report forest violations will be paid for their work. Another portion of the PFES payments is for public use purposes such as for construction of village roads and community buildings, and to support education. The remaining balance is intended for payment to the forest owners. It is crucial to draw up village regulations and rules governing the utilization of PFES payments. There must also be procedures established for handling conflicts or other issues that may arise. Attention to these needs will contribute to successful forest protection.

4.1.2 Forest regeneration in the allocated forestland under FPDP

According to the data showed in the Muong Cha FPDP 2012 – 2020, total area of non-forested land planned for forestry in Muong Muon commune is 2,488.9 ha, of which 721.4 ha is currently under Ic status, which can be formed as the regrowth forests (IIa) after 5 years if properly natural regenerated.

The allocation of this area will be absolutely completed to the landowners with forestland use right certificates before the end of 2015 as specified in the Plan No. 388/KH-UBND. For the landowners who are individuals, households or villages, they shall sign contracts with Muong Muon CPC to re-lease the allocated Ic area for natural regeneration. By doing this, the contractee (Muong Muon CPC) will have to make advance payment for the whole period of 2016 - 2020 (5 years) to the contractor (landowners) with same amount of unit price for natural regeneration (VND 200,000/ha/year maximum, as specified in the Dien Bien FPDP 2012 - 2020). In turn, shifting cultivation by the contractors (landowners) on the contracted area will be surely prevented. After 5 years regenerating, the forests will be formed and to be entitled to get PFES payment and the contracts will be terminated. Potential funding source for this solution can be the bank loans with very low interest rate, which Muong Muon CPC is a debtor, provincial FPDP is a warrantor and the contracted land-to-become-forests area is the deposited assets, or from international/domestic donors/investors. The advanced payment from contracting will be used in the Village Fund for the purpose of livelihood development if the owner is the village. For the Ic-bareland areas which to be allocated to the Muong Cha PFMB, this management board can do the same way if they cannot control the shifting cultivation activity on the allocated area. It is crucial to build the consensus between contractors and contractee.

Regeneration activities would be conducted under the FPDP. The area regenerated would be inventoried to verify the height and density of timber within the potential forests. The prescribed natural regeneration procedures are specified in Decision No. 175/QD/BNN/KHC. It would be essential to regularly check and evaluate the quality of areas zoned for regeneration. Evaluators would need to assess both the prospects for successful evolution of the forests, as well as any dangers and risks that could result in damage to the forests.

DARD would establish a team for evaluating the regenerated forests and re-classifying the same into a higher status if warranted by results. In the case of areas that are not officially part of forest lands, DARD would consult with the PPC to arrange other sources of funds for continuing regeneration work to develop such areas into forests.

4.1.3 Afforestation under FPDP and other policies

The Ib, Ia bareland areas in the production forest area are suitable for development of afforestation. The expected output for afforestation in production forest area based on the FPDP in the period 2012-2020 is 652 ha. According to the Muong Cha FPDP 2012-2020, afforestation in production forest area will be supported in accordance with Decision No. 147/2007/QD-TTg and Decision No. 66/2011/QD-TTg on production forest development.

Villager awareness in respect of technical matters is crucial to successful promotion of afforestation. However, awareness alone will not be sufficient. Practically none of the Muong Muon villagers and households have funds they could use to finance afforestation. Furthermore, the land use methods they apply are in keeping with long-term traditional cultivation practices. Therefore, it will be very difficult to bring about any significant change in practices simply through technical guidance.

One of the solutions proposed to address this situation is the encouragement and promotion of investments from at home and abroad that work in collaboration with the villagers. The invested funds

would be used to grow forest products for commercial sale and use. The funds would make it possible to secure materials and equipment needed to manage the forests. Investors would also help defray the costs of development using technical management assistance from consultants and the relevant administrative agencies. While focusing on forest development in Muong Muon, workable models for afforestation in production forest areas should also consider options for promoting replication in other areas of the commune.

In addition, a paper factory currently exists in Muong lay town and this is the potential market for the production forests in this commune due to the short distance to the factory. This is one of the motivations to encourage the villagers who are allocated to the forestland in production forest areas because there is the potential they can afforest to harvest products for sales to get additional income.

Activities and schedule of implementation in relation to forest protection, forest regeneration, and afforestation are in the Appendix 1- Table 1.

4.2 Solution for establishing and operating forest change monitoring system

4.2.1 Establishment and piloting operation of the improved forest change monitoring system

1) Structure of the commune level forest change monitoring system under PFMS

Close cooperation and collaboration need to be established between forest rangers and the VMBFMLD in order to achieve effective performance and operation of an improved forest change monitoring system. The essential components of a commune-level forest monitoring system are illustrated below in Figure 4.1.

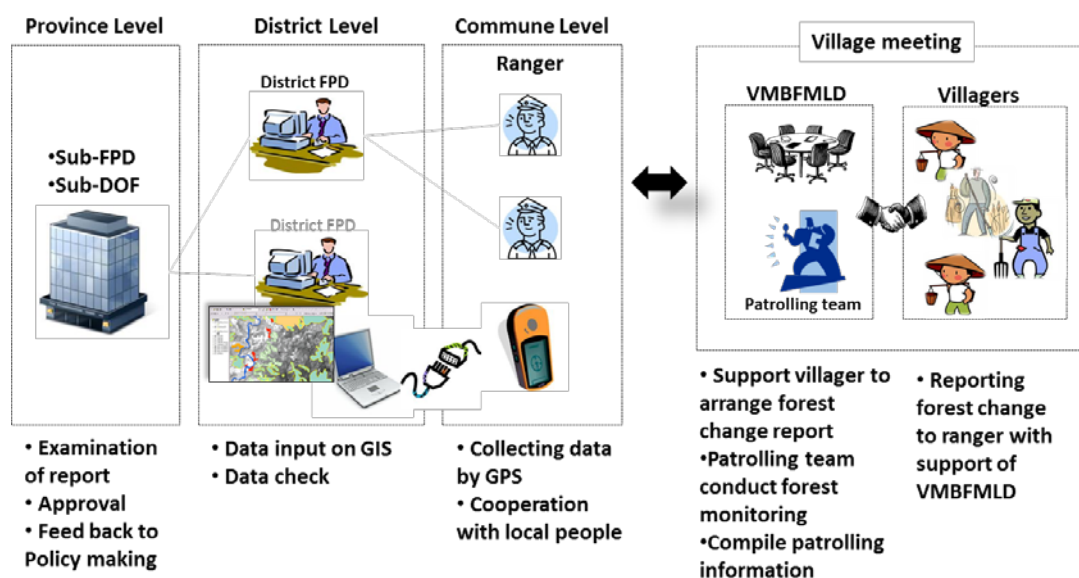


Figure 4.1 The Forest Monitoring System

2) Monitoring subjects

Design of an improved PFMS would be based on the existing PFMS. Consequently, the improved PFMS would follow existing government policies related to forest monitoring. According to the policies,

the monitoring subjects are defined as follows:

- Forest area decreased
- Forest area increased
- Amount of change
- Cause of change (deforested, afforested, and regenerated)

3) Implementation responsibilities

Responsibilities of each relevant institution involved in implementation of the improved forest change monitoring system are presented hereunder on Table 4.1. Field notes and modalities for each reporting are elaborated in detail in the PFMS manual.

Table 4.1 Operations of the improved forest change monitoring system at the commune level. Responsibilities of each relevant institution

DEPARTMENT/ SECTION/GROUP	IMPLEMENTATION	Interval	
Villages	<ul style="list-style-type: none"> ● Monitor and detect forest changes and report them to the forest rangers ● Reporting shall be submitted through other village meeting such as CCU meetings and/or monthly CPC meetings ● An emergency event should be reported respectively. 	Monthly	
	Villagers	Check the forest increase/decrease in the area they are responsible for managing according to the village FMP	Occasionally
	Forest Owners (Village, households, and individuals)	Check the forest increase/decrease of his/her/their owned forest area other than the implementation area of the village FMP	Monthly, Occasionally
	Patrolling team	Patrol protected forest and report to VMBFMLD if forest changes was observed	Occasionally
	VMBFMLD	Record the data on the forest increase/decrease reported by villagers and forest owners in the reporting formats	Monthly
MCPFMB	<ul style="list-style-type: none"> ● Supervise the monitoring activities and report directly to CPC 	Monthly	
Forest Rangers	<ul style="list-style-type: none"> ● Measure forest changes in response to the report from villages and at the random sampling points in the field. ● Report forest change data to the CPC and the District-FPD with appropriate evidence. ● Raise awareness of villagers in cooperation with the relevant institutions 	Monthly Occasionally	

4.2.2 Review of the piloted forest change monitoring system under PFMS

By 2015, the commune in cooperation of district FPD shall undertake a review and evaluation of the improved forest change monitoring system in the following areas: (1) technical and financial feasibilities of the improved forest change monitoring system, and (2) comparative cost-effectiveness of the improved forest change monitoring system as against other possible options including satellite-image-based change detection.

(1) Technical and financial feasibilities

Forest rangers are responsible for implementing a major part of the current forest monitoring system. However, each ranger is assigned a relatively wide area to manage and there are many hectares of forests to be monitored in Muong Muon commune. These factors make it difficult to implement the PFMS smoothly and correctly. Also, there is a considerable range of variability in the technical capabilities of individual rangers. Capacity building measures are needed to help achieve higher standards of monitoring skills and expertise. Insufficient capabilities and the wide expanse of areas each ranger must monitor, have a direct impact on accurate evaluation of patrolling and reporting activities at the village level. To help address this concern, the introduction of high-resolution satellite imagery is planned for inclusion in the review process.

(2) Cost-effectiveness

Before model cases of PFMS are fully scaled-up to the provincial level, it is essential to check their feasibility and cost-effectiveness. As mentioned above, the introduction of high-resolution satellite imagery for cross-checking PFMS results is planned during the review process. Accurate interpretation of high resolution satellite imagery makes it possible to accurately detect forest changes. This work can cover the whole pilot area at the same time that ground-level observations are being conducted in the field. Thus, satellite imagery interpretation can be used to verify the data from field surveys carried out under the PFMS. Then, PFMS implementation costs and satellite data procurement costs can be compared. This approach is planned for implementation toward the end of 2015. The procurement of satellite data and the methodology needs to be confirmed at that time, taking into consideration costs and availability of the data.

In the existing PFMS, forest degradation and regeneration are not included among the subjects to be monitored. Current government policies do not require monitoring of these two conditions. This might be due to the fact that, from a technical perspective, measurement and evaluation of forest degradation and regeneration require certain levels of expertise that villagers and rangers may not necessarily. Among others, the assessment of forest quality involves the design and implementation of plot surveys. However, forest degradation and regeneration are widespread and comprise major forest management challenges in the pilot area. Therefore, the possibility and feasibility of studying forest degradation and regeneration as part of forest quality change monitoring should be explored and assessed by middle 2015. Lessons derived from the review process can make positive contributions toward productive revision of the PFMS.

4.3 Solution for promoting livelihood development for the villagers

Agricultural crop cultivation, animal husbandry, and other production activities provide options for improving local livelihoods. As set forth in the village-based Livelihoods Development Plan (LDP), support should be provided consistent with the following basic principles:

- Only the villagers committed to forest protection and/or development of new forest as stipulated in the village forest management plan should be provided with support for livelihoods development. In addition, villagers' commitment on the forest protection should be described in the regulation/agreement with villagers participating in livelihoods development activities.

- Livelihoods development activities should not adversely affect the surrounding environment and natural resources.
- Not only income increase and increase in food production but also activities with reduction of resources utilizations and household expenditure should be considered.
- The villagers should play a central role in planning, implementation, monitoring, and evaluation of livelihoods development activities that they undertake.
- Livelihoods development should not focus only on investment support but also capacity building and awareness raising of the villagers and other relevant stakeholders.
- Support should be provided in an open and transparent manner with taking social equality fully into account.
- Livelihoods development activities should be selected with consideration of natural and socio-economic conditions in the commune and village. Due to the existence of 26 villages in the commune, the selection of livelihoods development activities to be supported should be done in due consideration to implementation efficiency as well.
- Support to livelihoods development should promote the utilization of locally available resources.
- Cost and benefit, investment requirement needed, and associated risks, and marketability should be fully considered before the activity selection

The village-based Livelihoods Development Plan (LDP) also states that support should be provided to villagers in the following steps:

- Step1: Analyze various resources available and existing livelihoods development activities in the village.
- Step2: Formulate a village-based Livelihoods Development Plan (LDP).
- Step3: Set up sub-groups by activity, analyze each activity proposed in the plan, and prepare an operational rule for each activity.
- Step4: Facilitate the formulation of annual implementation plan for each activity.
- Step5: Provide technical guidance, training, and extension service for livelihoods development activities during their implementation.
- Step6: Undertake monitoring and evaluation of livelihoods development activities.
- Step7: Encourage and facilitate repayments to the village fund in the case of a small-scale loan system, or animal/material transfer to the next household in case of a animal/material rotation system. Then further advance will be made to other households in the village.

Thirteen (13) livelihood development activities between the starting year of 2013 and 2014 are planned in this commune in the following table 4.2. The most popular activities are chicken raising, growing fruit tree, growing bamboo, and using Lao stove, which will be planned by 8 villages. The second most popular one is that goat raising, which will be planned by 5 villages. The third is that pig raising, which will be planned by 4 villages. The fourth is that mushroom growing and using biogas.

Table 4.2 The planned list of each activity for each village in the MM commune

Activity	Huoi Ho	Huoi Meo	Huoi Nha	Huoi Vang	Ket Tinh	
Pig				○		
Goat	●	●	●			●
Chicken	○	○		●		
Fish						
Fruit tree	○	○	○	○		○
Bamboo		○		○		○
Vegetable						
Mushroom				●		
Lao stove	●	●	●	●		●
Biogas				○		
Potato						
Arrowroot						
Maize						
Activity	MuongMuon 1	MuongMuon 2	Pu Mua	Pung Giat 1	Pung Giat 2	Total
Pig	●			●	●	4
Goat			●			5
Chicken	●	●	○	●	●	8
Fish		●				1
Fruit tree	○		○		○	8
Bamboo	○	○	○	○	○	8
Vegetable			●			1
Mushroom		○				2
Lao stove	●		●	●		8
Biogas	●					2
Potato	○					1
Arrowroot				○		1
Maize				○		1

Note 1: "●": from 2013 "○": from 2014

Note 2: Corrections and additions to this livelihoods development activity plan are to be made as appropriate in the course of conducting the C-RAP

Supporting mechanisms will be needed due to the shortage of staff currently involved in the activities. There is only a limited number of extension workers available at the commune level. Therefore, extension workers at the district level should be also deployed in order to provide sufficient extension services to the villagers.

Setting up a revolving fund management system is another essential ingredient for effectively carrying out livelihood development activities. The control of village funding through the VMBFMLD characterizes implementation under the present management system. Monitoring the use of funds by

CPC staff and other administrators is important. The submission of annual financial reports by the VMBFMLD to the CPC is one of the measures needed to efficiently monitor financial operation.

As noted in Table 4.2 above, many villagers are interested in animal husbandry. In this connection it is relevant to consider the potential risks involved, with particular attention of infectious animal diseases (e.g. blue ear disease for pigs, and bird influenza). Necessary measures should be taken to prevent these diseases.) As mentioned in Key Task 3.3, workable models to enhance livelihood development should be developed through pilot implementation by the middle of 2015, for future replication at other communes in the province. The results of livelihood development activities in Muong Muon should be reviewed at the middle of 2015. After 2016, implementation of workable livelihood development models will continue in this commune until 2020.

Schedule for livelihoods development activities is included in Appendix 1 - Table 3.

4.4 Solution for establishing and strengthening institutional framework for forest management and livelihoods development considering REDD+ activities

4.4.1 Establishing and strengthening institutional framework at commune level

At the commune level, the Commune Commanding Unit for Emergency Matters in Forest Protection and Forest Fire Fighting will play a central role in C-RAP management and implementation. C-RAP management and coordination mechanisms are shown on Figure 4.2. The following functions should be added to current roles and responsibilities of the Commanding Unit, and the functions should be clearly understood by the VMBFMLD.

- 1) To execute C-RAP in the promotion of sustainable forest management in the commune;
- 2) To guide and assist the establishment and operation of VMBFMLD;
- 3) To guide and assist preparation of village-based FMPs and LDPs;
- 4) To discuss with CPC to incorporate into C-RAP with other relevant projects in the commune to achieve the targets set in C-RAP;
- 5) To report to CPC in monitoring and updating on forest and forestland change;
- 6) To review and revise C-RAP;
- 7) To review the implementation of C-RAP for lessons learnt; and
- 8) To carry out to report results of implementation performance to district commanding unit for emergency matters periodically.

The following are members of the Commanding Unit:

- A CPC representative as head of the Commanding Unit
- A commune forest ranger will serve as a deputy
- Other members include representatives of the commune communist party, land administration officer, agriculture extensionist, officer in charge of agriculture and forestry, commune police officer, and every village head. Representatives from district including District People's Committee (DPC) and MCPFMB can be included as observers to the regular meetings.

Given the shortage of human resources such as extension staff in the CPC, it will be difficult to

implement dissemination activities for forest management and livelihoods development in all the villages. Thus, in addition to difficulties related to limited CPC staff, neither would it be possible for commune officials by themselves to efficiently assist all village-level planning and implementation. Recognizing these issues, attention to enhancement of skills at the district level is imperative. The relevant divisions at the district level that will be involved in supporting village-level activities include the Forest Protection Division, the Agriculture and Rural Development Division, Veterinary Station, and the Extension Station.

- For forest management activities, not only district-FPD rangers assigned to each commune but also MCPFMB officers need to provide assistance as a team.
- For livelihoods development activities, officers from District Agriculture and Rural Development Division, Extension Center, and Veterinary Station need to be provided assistance as a team.

The mechanism of management and coordination on C-RAP implementation is shown in the Figure 4.2.

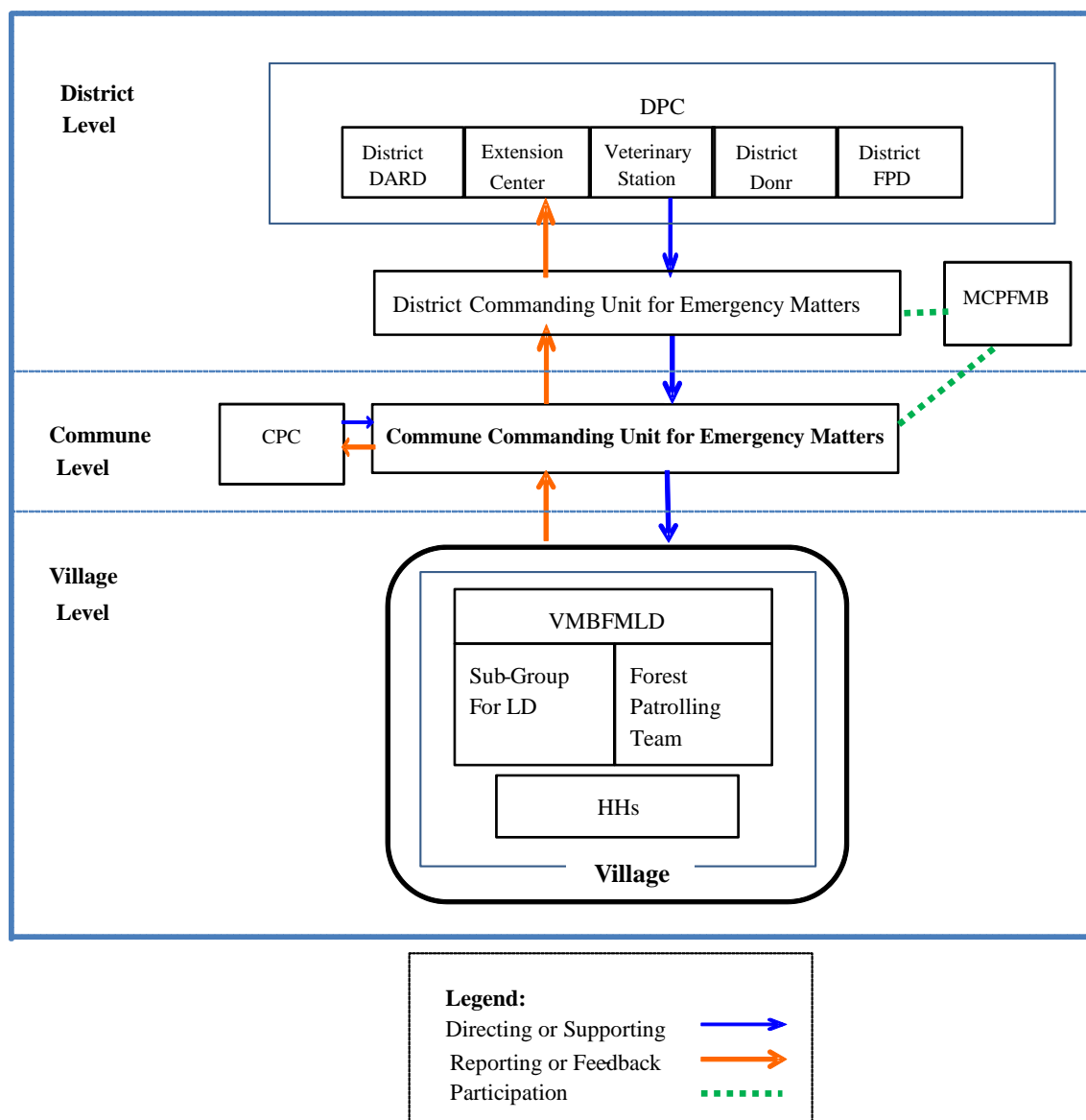


Figure 4.2 Mechanism of management and coordination on C-RAP implementation

4.4.2 Establishing and strengthening institutional framework at the village level

The institutional framework to implement C-RAP at village level is in the following Figure 4.3.

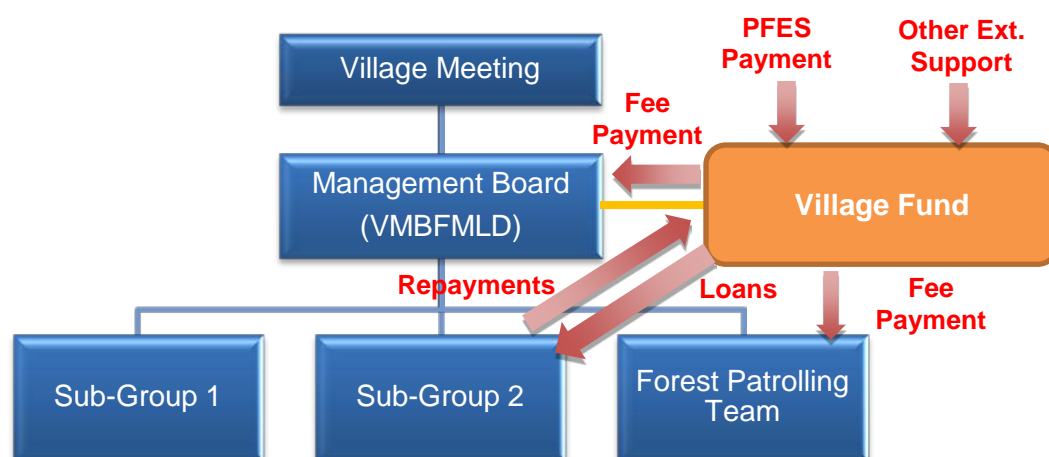


Figure 4.3 Institutional frameworks to implement C-RAP at village level

Each village will set up a VMBFMLD to coordinate forest management and livelihood development activities. If a village already has an organization specializing in forest management, that organization will be used to organize and coordinate these activities. The VMBFMLD's tasks and responsibilities are as follows:

- 1) To coordinate forest management and livelihoods development activities;
- 2) To ensure all village forest management regulations and plans are strictly followed by the villagers;
- 3) To coordinate sub-groups formulated for key livelihoods activities such as animal raising;
- 4) To ensure all village livelihoods activities are implemented according to the existing regulations and plans as well as technical requirements;
- 5) To ensure animal revolving and loan systems are working properly;
- 6) To operate and manage the Village Fund;
- 7) To handle violations of forest management or livelihoods development related rules and regulations in coordination with the Commune People's Committee; and
- 8) To coordinate with the Commune People's Committee and forest rangers.

VMBFMLD roles and functions must be clearly spelled out in the VMBFMLD Charter.

The VMBFMLD membership includes the following:

- 1) Head: Manage and lead the implementation of forest management and livelihoods development activities; and manage the budget.
- 2) Vice Head: Assist the head in activity management; and act as chairperson when he/she is absent.
- 3) Secretary: Take records; and keep budget.
- 4) Accountant: Keep and maintain accounting book and reports.

Sub-Groups should be organized for each livelihood activity such as raising chickens or vegetable

gardening. These sub-groups will be responsible for implementation of their respective activities, including repayments if necessary. In addition, Forest Patrolling Teams should be established to carry out forest protection and regeneration activities, and also to implement some of the tasks included in forest change monitoring under the PFMS as mentioned in Section 4.2.

Tentatively, main fund sources of the village fund are repayments and management fee contribution by villagers through the implementation of livelihoods development activities as well as PFES payment for forest protection and regeneration activities. Other ongoing and forthcoming support from government, donor agency, NGOs, and so on can also be pooled at and utilized through the village fund.

Money deposited in the village fund shall be utilized for, for instance,

- Management cost of VMBFMLD
- Payment to the forest patrolling team
- Other forest management activities
- Improvement of village common infrastructure
- Small-scale loan provision for livelihoods development.

The VMBFMLD will consider and decide on the manners of utilization for this fund.

Activities and schedule of developing such a system at commune and village levels are described in Appendix 1 - Table 4.

4.5 Solutions for strengthening CPC staff and villager capacities in forest management and livelihoods development

Solutions are discussed hereunder in response to Key Task 3.5 which focuses on promoting capacity development for CPC staff and villagers.

4.5.1 Raising awareness of CPC staff, villagers, and other relevant stakeholders

- Awareness raising workshops will be conducted for key CPC officers and others directly involved in forest management and protection to deepen their understanding of the negative impacts and potential risks posed by deforestation and forest degradation. Workshop presentations will also explain rights, responsibilities, costs and benefits of involvement in REDD+ implementation. Other items on workshop agendas will include PRAP and C-RAP operations; existing policy options; and participatory forest management.
- Similar awareness raising workshops will also be conducted for villagers. Village level workshops will echo the topics noted above; i.e. highlighting the negative impacts and potential risks posed by deforestation and forest degradation; detailing of forest protection and regeneration activities; and explaining rights, responsibilities, costs and benefits of involvement in REDD+ implementation. To help ensure good attendance, awareness raising workshops for villagers will take place during free times in between cropping schedules.
- Study tours will be organized and carried out for representatives of key agencies and village leaders to acquaint them with lessons learnt in other areas on effective implementation practices for forest protection and development, and combining forest development with livelihoods development.

- In addition to workshops and study tours, the themes mentioned above may be widely disseminated by other means such as leaflets, radio and TV, posters, movies, signboards, and incorporation in the agendas of community events.

4.5.2 Building capacity of CPC staff, villagers, and relevant stakeholders

Proposed training to build capacities is presented thematically on Table 4.3 below. However, additional themes may be included as appropriate based on requirements that emerge during implementation.

Table 4.3 The training theme and involved organizations

Theme	DPC officials	MCPF MB officials	District ranges	CPC officials	VMBF MLD	Forest Patrolling Team	Sub-group for LD	key Villagers
Skills in identifying villagers' needs	X	X	X	X				
Facilitation skills including participatory planning, implementation, monitoring, and evaluation of FMP and LDP	X	X	X	X				
Participatory forest and forestland allocation and contracting	X	X	X	X				X
Forest change monitoring		X	X	X				
Technical matter on afforestation (e.g. afforestation technology)		X	X	X		X		X
Forest patrolling and protection						X		X
Methodologies and skills in analyzing strengths, weaknesses, opportunities, and threats (SWOT) for the production activities for captive use and the marketing of products	X			X			X	X
Financial analysis of cultivation and animal husbandry	X			X			X	X
Techniques of cultivation and animal husbandry (e.g., techniques of fruit trees cultivation, chicken raising, and others)							X	
Management of VMBFMLD	X			X	X			
Management of the Village Fund	X			X	X			

Note: "DPC officials" are staff of relevant section in district level.

Activities under Solution 4.5, the number of training courses, schedules and responsible parties are summarized in Appendix 1 - Table 5.

IV. Implementation arrangement

The organizations to be involved in C-RAP implementation, and their respective roles and responsibilities are listed below.

(1) District People's Committee (DPC)

- To support to manage implementation of C-RAP
- To assign extensionists, veterinary staff, DARD staff, forest rangers, and others in order to support activities at commune level

(2) District Commanding Unit for Emergency Matters on Forest Protection and Forest Fire Fighting (DCU)

- To supervise C-RAP implementation in the commune level within the district
- To provide CCU with the advices on the implementation of C-RAP

(3) Muong Cha Protection Forest Management Board (MCPFMB)

- To assist CCU and villagers for implementation of C-RAP, building the system in which MCPFMB can send the staff for instructing implementation method of activities on forest management
- To contract with villages, households, and individuals to carry out forest protection, regeneration, and afforestation in the forest and land allocated to MCPFMB.

(4) Commune People's Committee (CPC)

- To support to manage implementation of C-RAP
- To assign appropriate personnel as member of CCU below

(5) Commune Commanding Unit for Emergency Matters on Forest Protection and Forest Fire Fighting (CCU)

CCU responsibilities are mentioned in the chapter of "4.4.1 Establishing and strengthening institutional framework in commune level" of "III. Commune REDD+ Action Plan"

(6) Village Management Board for Forest Management and Livelihoods Development (VMBFMLD)

VMBFMLD responsibilities are elaborated in the chapter 4.4.2 "Establishing and strengthening institutional framework at village level".

In addition to the organizations listed above, forest rangers should assist VMBFMLD implementation of forest management as advisers and as supporters. Furthermore, each village involved in C-RAP, and the households in those villages, should all cooperate on activities contained in village development plans in order to help successfully achieve intended outcomes of the activities.

V. Implementation cost and funding sources

1. Implementation cost

Cost estimates for implementing activities specified in the C-RAP are presented in the tables below. None of these tables include estimates for personnel costs.

Table 6.1 Costs needed for forest protection and development

Unit: 1,000 VND

No	Item	2013	2014	2015	2016	2017	2018	2019	2020	Total
1	Total cost of forest protection	104530 0	157174 2	157174 2	157174 2	157774 2	158174 2	159174 2	160174 2	1211349 4
a)	Protection forest	533900	543700	543700	543700	549700	553700	563700	573700	4405800
b)	Production forest	511400	102804 2	102804 2	102804 2	102804 2	102804 2	102804 2	102804 2	7707694
2	Total cost of forest regeneration				57500	66000	66000	66000	66000	321500
3	Total cost of afforestation	249000	49000	298000	298000	381000	49000	577000	0	1901000
a)	Afforestation in protection forest	249000	0	249000	249000	332000	0	332000	0	1411000
b)	Afforestation in production forest	0	49000	49000	49000	49000	49000	245000	0	490000
4	Total cost of tending	73500	90000	66000	135000	156000	231000	133000	180000	1064500
a)	Protection forest	73500	90000	66000	135000	156000	231000	133000	180000	1064500
b)	Production forest	0	0	0	0	0	0	0	0	0
5	Total cost of scattered tree planting	33000	33000	33000	33000	33000	33000	33000	33000	264000

Table 6.2 Costs for livelihood development

Unit: 1,000 VND

No	Activity of support	2013	2014	2015	2016	2017	2018	2019	2020	Total
I	Direct support	841000	117500	10000	220000	0	0	0	0	1188500
1	Fuelwood-efficient stoves									
	Amount (number of HHs involved)	100	200	200						500
	Cost norm (1000 VND/HH)	50	50	50						
	Total sum (1000 VND)	5000	10000	10000						25000
2	Animal raising (support of animals)									
	Amount (initial investment)	220								220
	Cost norm (1000 VND/HH)	2800								
	Total sum (1000 VND)	616000								616000
3	Animal raising (support of materials)									
	Amount (number of supported pigs)	220								220
	Cost norm (1000 VND/HH)	1000								
	Total sum (1000 VND)	220000								220000
4	Animal raising (support to the planting of grass for fodder)									
	Amount (number of HHs involved)		500							500
	Cost norm (1000 VND/HH)		100							
	Total sum (1000 VND)		50000							50000
5	Fruit tree planting									
	Amount (number of HHs involved)		350							350
	Cost norm (1000 VND/HH)		100							
	Total sum (1000 VND)		35000							35000
6	Vegetables growing									
	Amount (number of HHs involved)		450							450
	Cost norm (1000 VND/HH)		50							
	Total sum (1000 VND)		22500							22500
7	Producing commercial products				220000					220000
II	Indirect support	400000	66000	0	374000	22000	22000	22000	22000	928000
1	Training workshops at village level									
	Number of workshops	110	33		22	11	11	11	11	209
	Cost for a workshop	2000	2000		2000	2000	2000	2000	2000	
	Total sum (1000 VND)	220000	66000		44000	22000	22000	22000	22000	418000
2	Study tour									
	Number of tours	22								22
	Total sum (1000 VND)	180000								180000
3	Market search, trial production and registration and sale of products				330000					330000
	Total	1241000	183500	10000	594000	22000	22000	22000	22000	2116500

2. Funding sources

Funding sources for each activity of forest protection and development are illustrated below.

Table 6.3 Sources of funding for each forest protection and development activity and cost-funding balances

Unit: 1,000 VND

No	Activity	Funds needed to implement C-RAP	Sources and amount of potential funds		Gap (Potential funds – Needed funds)	Potential sources of funding to attract
			State budget	FPDF		
	Total	17780994	3229500	1243499 4	-2116500	- Support from foreign and international organizations - REDD+ Fund
<i>I</i>	<i>Forest protection and development</i>	15664494	3229500	1243499 4	0	
1	Forest protection	12113494	0	1211349 4	0	
2	Natural regeneration of forest	321500	0	321500	0	
3	Forest regeneration with supplementary planting	2475500	2475500	0	0	
4	Afforestation in production forest area	490000	490000	0	0	
5	Development of forest gardens	264000	264000	0	0	
<i>II</i>	<i>Livelihood development</i>	2116500	0	0	-2116500	
1	Direct support	1188500	0	0	-1188500	
2	Indirect support	928000	0	0	-928000	

3. Financial solution

The tables above provide illustrative examples of cost estimates and funding requirements. Comparing the estimated amount of funds required, the currently available budget makes up 88.1% (equivalent to 15,664 billion VND). Therefore, the missing budget is 11.9% (equivalent to 2,116 billion VND). One of the solutions to fill in the gap is to seek attractive funding sources. There is a need to seek other sources of funding through workshops and development of a website promoting the potentiality of forestry development in Muong Muon as well as its needs for investment.

VI Monitoring and evaluation of C-RAP implementation

Implementation of forest management and livelihood development activities will be reviewed annually, and annual plans for the succeeding year will be prepared each December, based on results of the annual reviews. The monitoring of activities will be conducted periodically but ad-hoc monitoring can be

implemented at any time. C-RAP itself will be reviewed in 2015. This review will seek to determine whether or not each target value, concept, and methodology included in the plan is appropriate or whether revisions are needed. This review work will contribute to building workable models for replication in other communes in the province. A comprehensive evaluation will be conducted in 2020 for preparation of the subsequent REDD+ plan starting from 2021. In addition to the regular review in 2015 and the comprehensive evaluation in 2020, the C-RAP can be revised at anytime if specific needs arise.

Appendix: Activities under the solutions

Table1. Schedule of promoting forest protection, regeneration and afforestation

Activity	Implementation schedule								Responsibility
	2013	2014	2015	2016	2017	2018	2019	2020	
Identify the boundary of villages in the field and on the map	X*								DARD, District-DARD, District-DONRE, District-Sub FPD, MCPFMB DPC, CPC, MCPFMB, and villagers MCPFMB, CPC, and villagers
Clarify the location and the boundary of forestland of the commune in the field and on the map	X	X							
Identify the people who are managing or using forestland as well as the area and boundary of their land (in the field and on the map)		X							
Improve the procedure for allocation, grant of use rights certification or contracting forest management activities		X							
Introduce on payment policies and benefits that the villagers will receive when they carry out activities of forest protection, forest regeneration, afforestation and forest tending	X	X							
Prepare plans of forest protection, forest regeneration, afforestation and forest tending through villagers` participation	X	X							
Implement activities of forest protection, forest regeneration, afforestation and forest tending		X	X	X	X	X	X	X	Villagers

(*This training workshop has partially been held)

Table.2 Schedule for operating forest change monitoring

Activity	Implementation schedule								Responsibility
	2013	2014	2015	2016	2017	2018	2019	2020	
Strengthening field survey skills (GPS and GIS operation, remote sensing analysis and identification of forest type)	X			X			X		District- Sub-FPD CPC Rangers Villagers VMBFMLD
Strengthening operation of the forest information database system (compiling the field data, GIS operation and remote sensing analysis, random sampling grids)	X	X		X	X		X		
Strengthening the skills of villagers on recording and reporting forest change of the field with cooperation of VMBFMLD	X	X	X	X	X	X	X	X	

Table3. Schedule of promoting agricultural crop cultivation, animal husbandry and other production activities

Activity	Implementation schedule								Responsibility
	2013	2014	2015	2016	2017	2018	2019	2020	
Identify available resources and potential products in the village	X	X							CPC and villagers
Prepare livelihoods development plan and its village's regulation	X								
Analyze feasibility of planned activities	X								
Prepare detailed operational plan for each village	X								
Provide technical support for livelihoods development activities	X	X	X						
Implementing the livelihoods activities	X	X	X	X	X	X	X	X	Villagers

Table4. Schedule of establishing and strengthening institutional framework for forest management and livelihoods development

Activity	Implementation time								Responsibility
	2013	2014	2015	2016	2017	2018	2019	2020	
Issue a decision on the functions and tasks to the Commune Commanding Unit		X							CPC
Start activities directed by the Commune Commanding Unit		X							CPC
Support to the setting up of VMBFMLD and issue a decision in recognition of VMBFMLD establishment as well as their tasks and functions	X	X							CPC, Villagers
Collect and analyze information to clarify the appropriateness, gaps, effectiveness, and sustainability of the mechanism for coordination, management and supervision of activities at commune level			X						DPC, CPC, and villagers
Review for the outcomes of the implementations by the proposed institutional framework			X						

Table5.Schedule of developing capacity in the level of awareness, technique, and knowledge on forest management and livelihoodsdevelopment for CPC staffs, relevant organization staffs, and villagers

Activity	Implementation schedule								Responsibility
	2013	2014	2015	2016	2017	2018	2019	2020	
Training on how to plan for forest management activities and livelihood development activities for CPC officials and other relevant officials	X*	X							DARD, DPC, MCPFMB
Training on skills in identifying villagers' needs	X	X							CPC
Study tours for representatives of CPC and villagers		X	X						DARD, DPC, and CPC
Training on financial analysis of forest management and livelihood development for villagers		X		X					CPC, DPC
Training on forest change monitoring for villagers		X		X					District Sub-FPD
Training on forest patrolling & protection for villagers		X		X					
Training on techniques of forest management activities and livelihood development activities for villagers		X	X	X					DPC, CPC

(*This training workshop has partiallybeen held)

Note: Corrections and additions to this activity plan are to be made as appropriate in the course of conducting C-RAP.

Examples of Village Management Plan in the Muong Muon Commune

Muong Muon I village

Muong Muon II village

Current Status of Forests and Forestlands and Priority Activities to be implemented

Location: Muong Muon I village, Muong Muon commune, Muong Cha District, DB

**Formulated date:
10/7/2013**

Place (local name)	Area (ha)	FPDP Parcel ID	Current Status	Reasons	Priority Activities to be Implemented
Huoi dich		KNB – 6, 8, 7, 9	Forest is developing well	Good protection	Forest protection
Huoi Tong		KNB – 16 KNB – 12	Forest is developing well	Good forest protection against deforestation for cultivation	Forest protection
Huoi bua		KNB – 0	Forest is developing well	Good protection	Forest protection
Huoi co bay		KNB – 12, 13, 14	Forest is developing well	Good forest protection against forest heavy exploitation	Forest regeneration and protection
Huoi na noi		KNB -2, 3, 11, 10	Forest is developing well	Good protection	Forest regeneration and protection
		la – a, CS – 0	Burnt-over land left fallow	Barren land, low productivity	Rubber plantation
		la – 2, 3 lb – 3, 2	Burnt-over land left fallow with thoroughwort and Alang grass	Barren land, low productivity	Afforestation
		CS – 8	Rice field	Rice field	Rice cultivation
		CS – 2, 6, 10	Forest is degraded	Conversion to burnt-over land	Forest regeneration and protection

VILLAGE FOREST MANAGEMENT PLAN

Location: Muong Muon I village, Muong Muon commune, Muong Cha District, DB

**Formulated date:
10/7/2013**

No	Activity	Implementation Year					Target Location	Output (Target Area)	Responsibility	Needed Supports
		2013	2014	2015	2016	2017				
1	Complete team of Forest Management and Protection	X	X	X	X	X	At the village	8 people	Villagers	Operation expenses for forest patrolling and protection
2	Forest protection	X	X	X	X	X	KNB areas	100 ha	Villagers	Training on forest management, patrolling and protection
3	Afforestation		X	X	X	X	1a – 2, 3 1b – 2, 3	35 ha	Villagers	Seedlings, technical training
4	Forest regeneration	X	X	X	X	X	KNS – 1c areas		Villagers	
5	Study tours	X	X						Villagers	Travelling expenses

Muong Muon, / /2013

**Village Head
Approved by the CPC**

Analysis of Existing/Existed Activities

Location: Muong Muon I village, Muong Muon commune, Muong Cha District, DB

**Formulated date:
10/7/2013**

Activity Name	Current Status	Advantages to the Villagers	Existing Issues	Unmanageable Risks	Potential Improvements
Pig	-High growth rate	For sale	-Little experience in raising pigs -Lack of capital	Diseases Burglary	Pigs for breeding Technical training; vaccination
Chicken	-High growth rate - Large number of chicken raised	-Easy to sell -Source of food	-Diseases -Lack of capital	Diseases	Chicken for breeding Technical training; vaccination
Duck	-High growth rate -Small number of goats raised	- Easy to sell -Source of food	-Diseases -Lack of capital	Diseases	Ducks for breeding Techniques; vaccination
Goat	- High growth rate -Small number of goats raised	Available feed	Lack of capital		Goats for breeding Techniques
Fish	- High growth rate -Abundant ponds	-Easy to sell -Resilient to diseases	Frequent occurrence of diseases		Fingerlings Techniques

Identification of Existing but Un-/Under-utilized Resources

Location: Muong Muon I village, Muong Muon commune, Muong Cha District, DB

**Formulated date:
10/7/2013**

Type	Resources Available in the Village
Human resource	<ul style="list-style-type: none">- December and January are idle time.- Abundant labour force- A majority of villagers completes the lower secondary education
Natural resource	<ul style="list-style-type: none">- Land is large in area but exhausted.- Abundant manure (from cattle and poultry)- Abundant rice straw (after harvest)

VILLAGE LIVELIHOODS DEVELOPMENT PLAN

Location: Muong Muon I village, Muong Muon commune, Muong Cha District, DB

**Formulated date:
10/7/2013**

No	Activity	Implementation Year					Villager's Contribution	Assistance Needed
		2013	2014	2015	2016	2017		
1	Sow	X	X	X	X	X	Labour (building pigsties, tending), feed, veterinary medicines	Sows for breeding, technical training Study tour
2	Chicken	X	X	X	X	X	Labour (building coops), feed, veterinary medicines	Chickens for breeding, technical training Study tour
3	Tomato		X	X	X	X	Labour (tending, protection), fertilizers	Seedlings, study tours, technical training
4	Fruit trees		X	X	X	X	Labour (digging holes, tending, protection); fertilizers	Seedlings, study tours, technical training
5	Lao stove	X	X	X	X	X	Contribution of 50% of stove costs to the village fund	Stove delivery Study tours
6	Biogas	X	X	X	X	X		Building materials Study tours
7	Bamboo		X	X	X	X	Labour (tending, protection)	Seedlings, techniques

Muong Muon, / /2013

**Village Head
Approved by the CPC**

Current Status of Forests and Forestlands and Priority Activities to be implemented

Location: Muong Muon II village, Muong Muon commune, Muong Cha District, DB

**Formulated date:
5/7/2013**

Place (local name)	Area (ha)	FPDP Parcel ID	Current Status	Reasons	Priority Activities to be Implemented
Pu Cha Hill		KNB – 10,11,3,2	Natural forest: IIB, IIIa1	Good protection	Forest patrolling and protection
Huoi dia			Natural forest: IIB, IIIa1	Good protection	Forest patrolling and protection
Huoi phia			Land for cultivation	Land for cultivation	Cultivation of cassava
Hua ta		CS-16, 5	Alang grass	Cultivation on burnt-over land	Forest regeneration and afforestation
Co bay		KNB – 12	Ila		Forest patrolling and protection
Huoi bua		KNB – 0	Forest type: Ila	Slopes	Forest patrolling and protection
Huoi tong		KNB – 16	Ila	Slopes	Forest patrolling and protection
Huoi dich		KNB–15, CS–12	Forest type: Ila, Regeneration forest type: Ic	Mountain	Forest patrolling and protection
Pom bang bang		Ia2 – Ib3,Ib2, NN1, Ia3	Ia – Ib	Alang grass	Afforestation
Pu ca		Nr3 and adjacent areas	Ia	Alang grass	Afforestation

VILLAGE FOREST MANAGEMENT PLAN

Location: Muong Muon II village, Muong Muon commune, Muong Cha District, DB

**Formulated date:
5/7/2013**

No	Activity	Implementation Year					Target Location	Output (Target Area)	Responsibility	Needed Supports
		2013	2014	2015	2016	2017				
1	Complete team of Forest Management and Protection	X	X	X	X	X	At the village	8 people	Villagers	Operation expenses for forest patrolling and protection
2	Forest patrolling and protection	X	X	X	X	X	Forest areas in Pu Cha, Hua Ta areas		Villagers	Training on forest management and protection
3	Afforestation		X	X	X	X	CS-16 & CS-5: 3 unforested land areas	30 ha	Villagers	Seedlings, technical training
4	Forest regeneration	X	X	X	X	X	CS-12 and areas surrounding CS-16 & CS-5	30 ha	Villagers	Study tours of economic development models
5	Study tours	X	X						Villagers	Travelling expenses

Muong Muon, / /2013

**Village Head
Approved by the CPC**

Analysis of Existing/Existed Activities

Location: Muong Muon II village, Muong Muon commune, Muong Cha District, DB

Formulated date:

5/7/2013

Activity Name	Current Status	Advantages to the Villagers	Existing Issues	Unmanageable Risks	Potential Improvements
Poultry (chicken, duck)	Difficult to farm	Resilient to diseases	-Poultry yard unavailable -Lack of poultry raising techniques	Frequent occurrence of diseases	-Training on poultry raising techniques -Vaccination -Keep poultry coops clean
Fish	Small number of ponds available	-Easy to sell -Source of food	-Feed unavailable -Low growth rate	Frequent occurrence of diseases	-Training on fish raising techniques -Sanitation for the ponds
Pig	-High growth rate -Small number of pigs raised	For sale	-Lack of capital -Lack of pig raising techniques	Vulnerable to diseases	-Training on pig raising techniques -Vaccination -Keep pigsties clean
Vegetable	Easy to cultivate	Easy to sell	Insufficient water for irrigation	Vulnerable to pests	Guidance on planting techniques
Fruit tree	Easy to cultivate	Easy to sell	Lack of capital	Pests (stem borers)	Training on tending techniques

Identification of Existing but Un-/Under-utilized Resources

Location: Muong Muon II village, Muong Muon commune, Muong Cha District, DB

**Formulated date:
5/7/2013**

Type	Resources Available in the Village
Human resource	<ul style="list-style-type: none">- August, September and December are idle time.- Abundant labour force- A majority of villagers completes lower secondary education
Natural resource	<ul style="list-style-type: none">- Abundant Chit plants (materials for making Chit brooms)- Rice straw- Manure (from cattle and poultry)

VILLAGE LIVELIHOODS DEVELOPMENT PLAN

Location: Muong Muon II village, Muong Muon commune, Muong Cha District, DB

**Formulated date:
5/7/2013**

No	Activity	Implementation Year					Villager's Contribution	Assistance Needed
		2013	2014	2015	2016	2017		
1	Chicken	X	X	X	X	X	Labour (building coops, tending), feed, veterinary medicines	Chickens for breeding, feed, technical training
2	Fish	X	X	X	X	X	Labour (preparing ponds, tending fish), feed	Fingerlings, feed, technical training
3	Bamboo		X	X	X	X	Labour (digging holes for planting, tending), fertilizers	Seedlings Technical training
4	Mushroom		X	X	X	X	Labour, rice straw	Seedlings Technical training

Muong Muon,

/ /2013

Village Head

Approved by the CPC

